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Montana. Beartooth Resource Conservation and Preliminary work plan for the proposed Beartooth Resource

RY WORK PLAN

FOR THE

Proposed Beartooth Resource Conservation & Development Project

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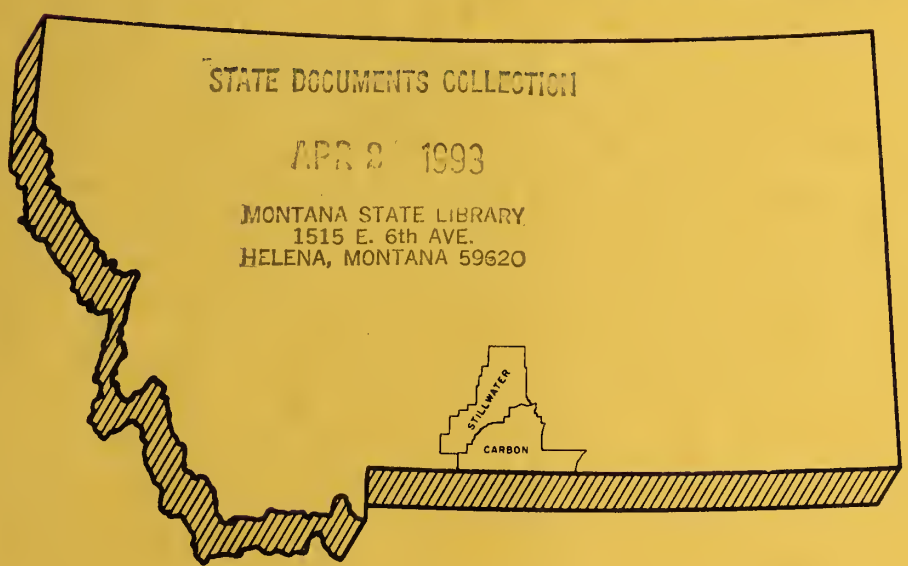

Developed by Project Sponsors

with assistance of

United States Department of Agriculture

and other Federal, State, Local Agencies and Groups

May 1969

STATE SOIL CONSERVATION COMMITTEE

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ACKNOWLEDGMENTS

The materials and information in this preliminary work plan were drawn from many sources. The program committee wishes to express its appreciation and gratitude to all State and Federal agencies and others who contributed to its development.

The willingness and ability of people working together to develop this work plan that will help solve some of the complex problems of the Beartooth area was well expressed over the past several months - no single agency or organization could have done it alone. Team effort is needed for a balanced program in total resource development. With support of the people, these plans can be carried out.

The sponsors and program committee wish to acknowledge the information and support received from:

Agricultural Stabilization and Conservation Service (ASCS)
Bureau of Land Management (BLM)
Bureau of Reclamation (BR)
Carbon County Development Council (CCDC)
Cooperative Extension Service (CES)
Farmers Home Administration (FHA)
Forest Service (FS)
Montana Bureau of Mines and Geology (MBM&G)
Montana Water Resources Board (MWRB)
Montana State Forester (MSF)
Small Business Administration (SBA)
Soil Conservation Service (SCS)
State Soil and Water Conservation Committee (SSWCC)
Stillwater County Development Organization (SCDO)
U.S. Weather Bureau (environmental, etc.) (USWB)

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ENDORSEMENTS

The following civic organizations have pledged their support and given their endorsement to the Beartooth Resource Conservation and Development Project:

1. Clarks Fork Jaycees
2. Joliet Lions Club
3. Carbon County Development Council
4. Farmers Union - Bridger Chapter
5. Carbon County Farmers Union
6. Fromberg Service Club
7. Red Lodge Rotary
8. Mayor of Bearcreek
9. Rock Creek Water Users Association
10. KRBN Radio Station
11. Red Lodge Chamber of Commerce
12. Carbon County City-County Planning Board
13. Park City Fire District #2
14. Columbus Jaycees
15. Park City Volunteer Firemen
16. Park City American Legion
17. Stillwater County Farmers Union
18. Edgar Volunteer Firemen
19. Red Lodge City Council
20. Joliet City Council
21. Carbon County Extension Homemakers Council
22. Absarokee Lions Club
23. Joliet Homemakers Extension Club
24. Luther Parent-Teachers Association
25. Mr. & Mrs. J. W. Israel (school teacher in Joliet)
26. Joliet Volunteer Firemen
27. Bearcreek Womens Club
28. Bearcreek City Council
29. Carbon County ASC Committee
30. Stillwater County ASC Committee
31. Carbon County News
32. Boyd Helping Hands Extension Club
33. Absarokee Civic Club
34. AYUDA Homemakers Club
35. Red Lodge Jaycees
36. Kiwanis

SECTION I SUMMARY

The Soil and Water Conservation Districts, Boards of County Commissioners, and incorporated towns of Carbon and Stillwater Counties of Montana present this Preliminary Work Plan for the orderly development of the resources of the two-county Beartooth Area. The ideas and proposals stated here are drawn from approximately 40 meetings with over 800 people participating. Advice and counsel have been received from all service organizations, county, state, and Federal agencies.

County development councils, with guidance from the Montana State Extension Service, have been active for several years. Resource committees in these councils have been engaged in the orderly review of special project needs of the local people. Coordinated effort and federal assistance are needed to implement many of these projects for better economic growth and development of the Beartooth area.

OBJECTIVES

The need for project approval is based on the following major objectives agreed on by the sponsors and the program committee. Local people support these objectives which provide for orderly development of the Beartooth area. Their accomplishment will provide a better place for people to live, work, and play.

1. Plan, develop, and protect the natural resources of the area to their fullest potential to meet the needs of people and permit the highest social and economic return to the community, state, and nation.

2. Reverse the trend of population migration from one of outgoing to one of incoming by providing job opportunities in the development of all resources. We want to provide a favorable climate for industrial development that is compatible with other resources of the area.

3. Increase farm and ranch income through accelerated application of well planned conservation practices that will protect production capability of resources and provide alternatives. There is a need to develop skills in operations, marketing, and farm-related industrial enterprises.

4. Provide opportunities for adjustments in the size of farm units to increase family income and reduce the number of families living at poverty levels.

5. Provide technical and financial assistance to better utilize our water resources for domestic, agriculture, recreation, and industrial uses.

   a. Encourage development and use of sprinkler irrigation.
   b. Encourage consolidation of irrigation canal systems.
   c. Encourage lining of irrigation canals.
   d. Explore and promote use of PL-566 on potential watersheds in the area.
   e. Develop reservoir sites with emphasis on multipurpose use.
   f. To rid the Clarks Fork River and other streams of silt pollution.

6. Improve recreational opportunities and increase tourism in the area. Provide income-producing recreation that is compatible with local interests and needs. Develop existing tourist attractions that will bring outside visitors to the area. Provide attractive accommodations for the tourist and sportsman. Improve access to our recreational and historical sites.

7. Provide improved educational facilities and a wholesome social environment for our young people. Economic data shows that people are leaving because employment opportunities are limited. We will encourage and assist in locating new industry in the area. Job opportunities will provide the incentive to keep our youth in the area. They are our future leaders.

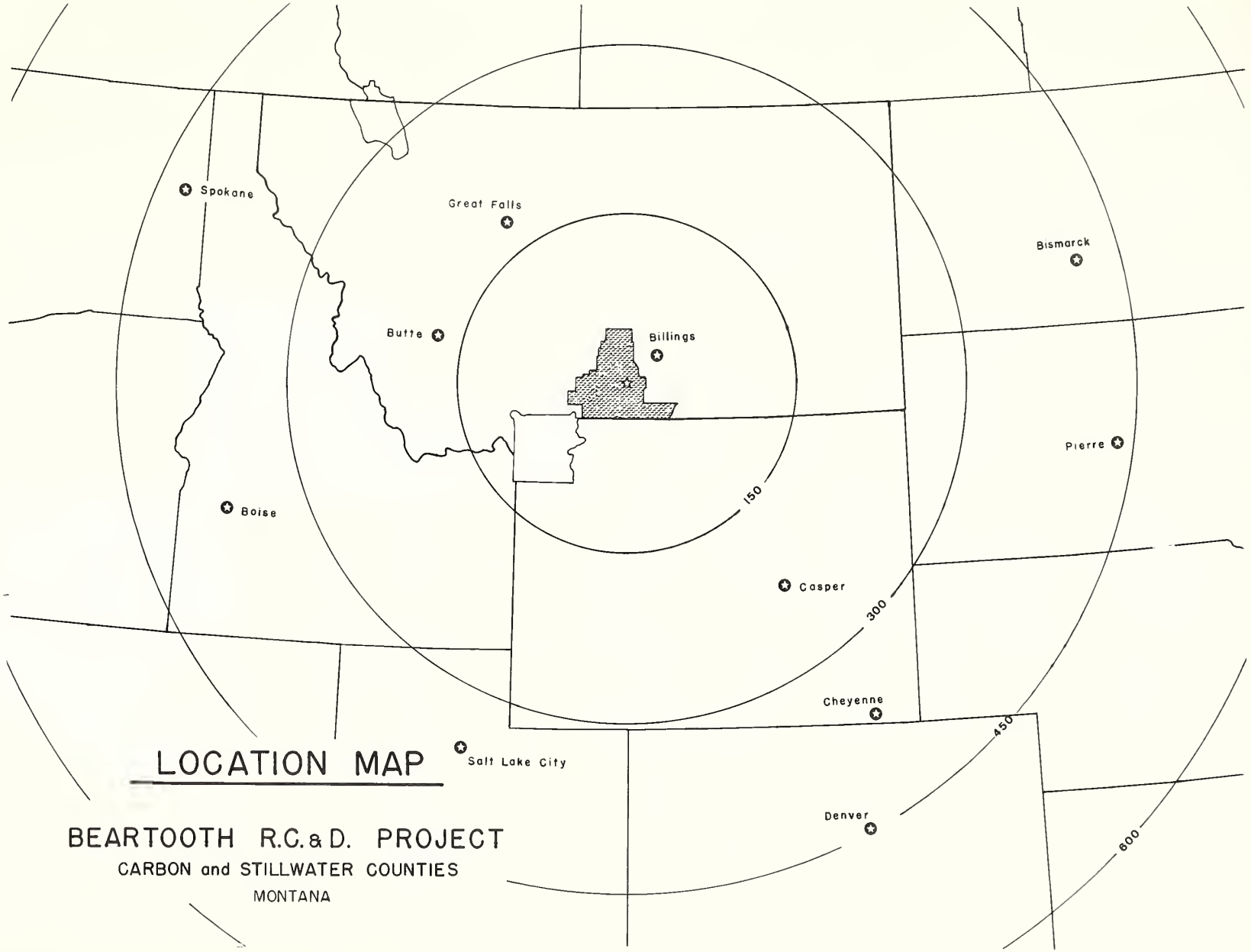
8. To develop mineral resources of the area without destroying other resources. Careless and thoughtless exploration activities have defaced the land, created gullies, and polluted streams. We will work for an active mineral industry consistent with conservation of all resources.

9. Develop our timber resources and marketing facilities under a balanced program that will provide multiple use benefits. Certain woodlands have a greater value for recreation uses than for timber production. Both uses will be encouraged when feasible.

10. To increase the living accommodations available in the area. Small communities have few rental units and they are generally old and unattractive. Increased employment requires additional housing and we will explore all methods to provide it.

11. To increase cooperation and decrease frictions that keep communities from working together. Diverse problems and extremes in geography have created seeming difficulties in the coordination of ideas leading to programs for people. We will seek to provide a common meeting ground -- a facility that will provide a cooperative climate where people can work together to accelerate needed progress.

12. Complete a detailed soil survey of Stillwater County portion of the Beartooth area.



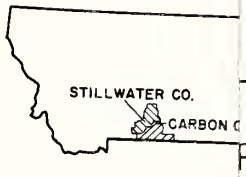
LOCATION MAP

BEARTOOTH R.C.&D. PROJECT

CARBON and STILLWATER COUNTIES

MONTANA

LAND
NERSHIP MAP



LEGEND

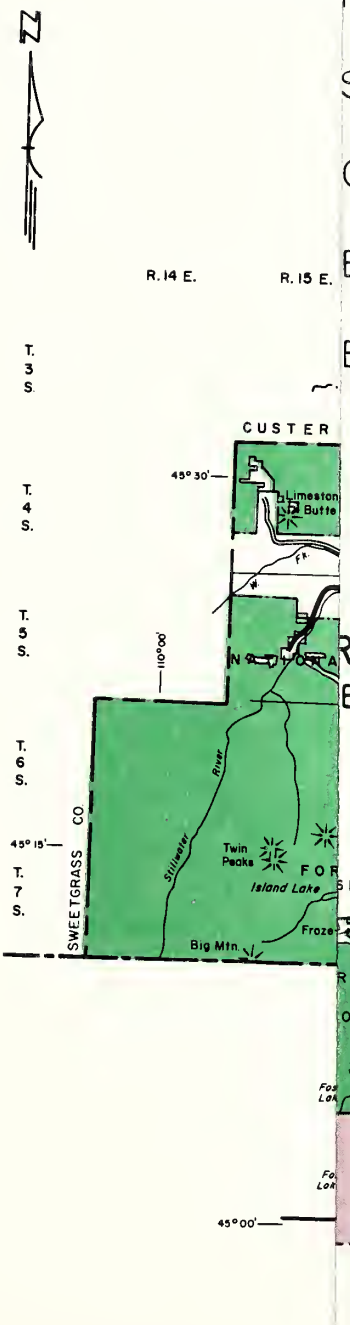
PRIVATE OWNERSHIP

STATE OF MONTANA

CUSTER NATIONAL FOREST

BUREAU OF LAND MANAGEMENT

BIGHORN CANYON NATIONAL RECREATION AREA



RTOOTH R.C.&D. PROJECT
BON AND STILLWATER COUNTIES
MONTANA

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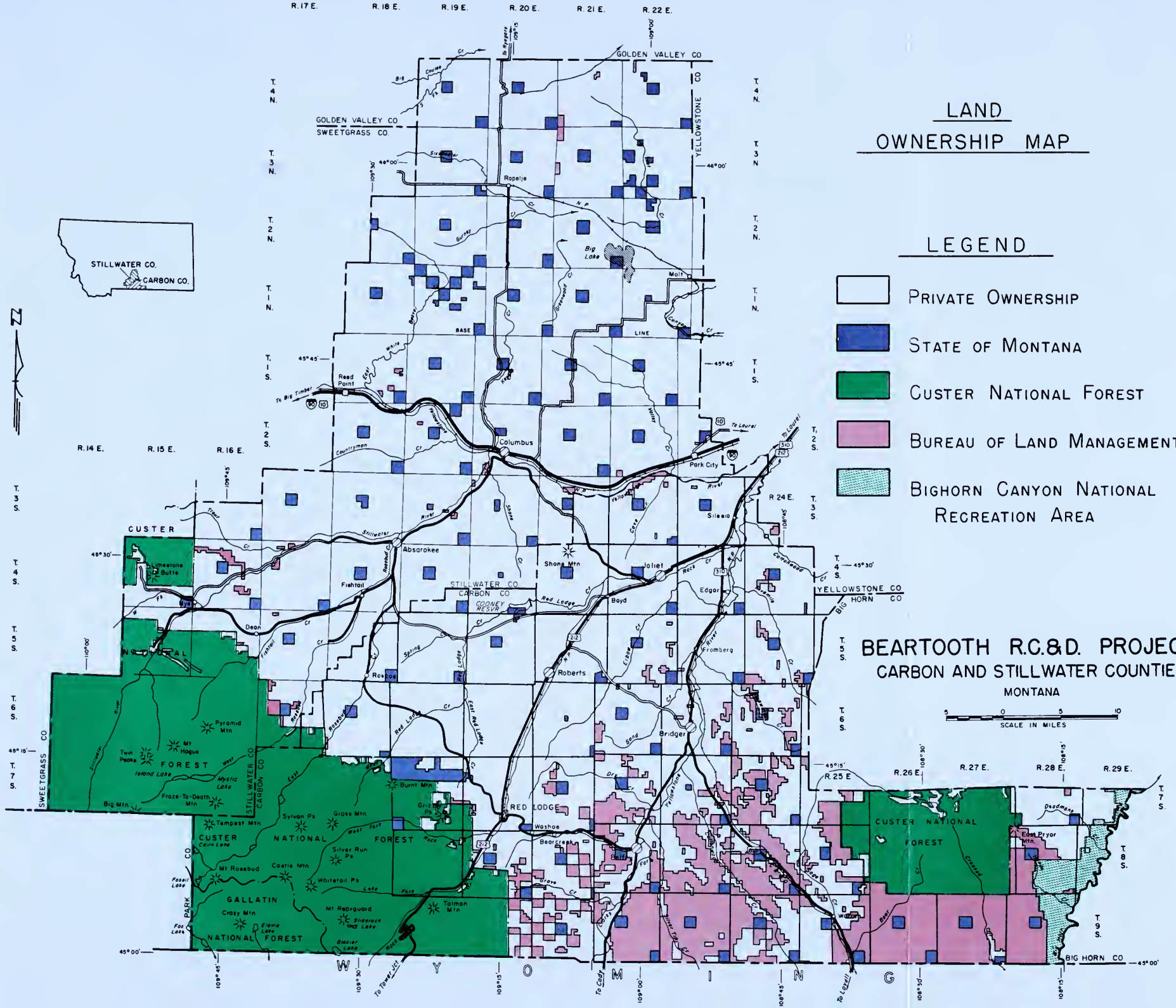
SCALE IN MILES


LAND
OWNERSHIP MAP
LEGEND
PRIVATE OWNERSHIP
STATE OF MONTANA
CUSTER NATIONAL FOREST
BUREAU OF LAND MANAGEMENT
BIGHORN CANYON NATIONAL RECREATION AREA
BEARTOOTH R.C.&D. PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA
SCALE IN MILES
STILLWATER CO.
CARBON CO.
GOLDEN VALLEY CO
SWEETGRASS CO.
YELLOWSTONE CO
BIG HORN CO
R. 17 E.
R. 18 E.
R. 19 E.
R. 20 E.
R. 21 E.
R. 22 E.
R. 14 E.
R. 15 E.
R. 16 E.
R 24 E.
R. 25 E
R. 26 E.
R. 27 E.
R. 28 E.
R. 29 E.
Ropelje
Columbus
Park City
Silesia
Joliet
Absarokee
Shona Mtn
Fishtail
Limestone Butte
Boyd
Edgar
Dean
Roberts
Fromberg
Bridger
Red Lodge
Washoe
Bearcreek
Belfry
Roscoe
Reed Point
Big Lake
Melville
Molt
Pyramid Mtn
Mt Hogue
Twin Peaks
Island Lake
Mystic Lake
Froze-To-Death Mtn
Big Mtn
Burnt Mtn
Grizzly Pk
Gross Mtn
Sylvan Pk
Tempest Mtn
Cairn Lake
Silver Run Pk
Mt Rosebud
Castle Mtn
Whitetail Pk
Fossil Lake
Crazy Mtn
Elena Lake
Fox Lake
Mt Reargoard
Sheerface Lake
Glacier Lake
Talmon Mtn
East Pryor Mtn
CUSTER NATIONAL FOREST
CUSTER NATIONAL FOREST
GALLATIN NATIONAL FOREST
To Big Timber
To Laurel
To Tower Jct.
To Cody
To Laurel
WYOMING

LEGEND

INED SOILS OF THE FLOOD PLAINS AND NARROW VALLEYS

rg association: Dominated by well drained, light colored, loam and sandy loam soils and alkali loam soils ms in warm arid regions.

on: Dominated by well drained, light colored, clay loam soils and light colored, very gravelly, high lime s on alluvial fans and terraces in warm arid regions.

-Dukon* association: Dominated by well drained and poorly drained, dark colored, loam soils and well colored, sandy loam soils in cold subhumid regions.

t*-Garvin* association: Dominated by well drained, light colored, clay loam soils and light colored, very lime soils and shallow, reddish loam soils on alluvial fans, terraces, and rough steep uplands in warm arid

association: Dominated by well drained, light colored, clay loam soils and loam soils on valley bottoms lluvial fans in cool semiarid regions.

AND SHALLOW, CLAYEY SOILS OF THE SHALE AND SANDSTONE UPLANDS

lla-Lismas association: Dominated by shallow, excessively drained, light colored, clay soils on shale, and andstone on rolling to steep uplands in warm arid regions.

ntsac* association: Dominated by shallow, excessively drained, light colored, clay soils on shale, and hale and sandstone, on rolling to steep uplands in cool semiarid regions.

ociation: Dominated by well drained, light colored, loam and clay loam soils with clay subsoils, and ls on sandstone uplands in warm semiarid regions.

his association: Dominated by well drained, dark colored, clay loam soils and light colored, moderately sandstone on broad ridge tops and steep sloping uplands in cool subhumid regions.

le association: Dominated by well drained, light colored, clay soils on steep and hilly shale bedrock arid regions.

association: Dominated by well drained, dark colored, clay loam soils and moderately deep and shallow and sandstone bedrock in cool semihumid regions.

on: Dominated by shallow, excessively drained, light colored, clay soils on shale and sandy loam soils on bedrock plains in warm arid regions.

association: Dominated by well drained, light colored, clay loam and loam soils with clay subsoils and ls on sandstone uplands in warm semiarid regions.

EP LOAMY SOILS OF THE OUTWASH TERRACES AND FANS

Sayne* association: Dominated by well drained, dark colored, loam soils and sandy soils on steep uplands foothills in cold subhumid regions.

ssociation: Dominated by well drained, light colored, very gravelly and stony loam soils with very tum on glaciated terraces in warm arid regions.

LOAMY SOILS OF THE MOUNTAINS

: Dominated by shallow and deep, well drained, dark colored, loam soils over limestone on sloping and in cold subhumid regions.

alpine soils: Dominated by well drained, shallow to very shallow, dark colored, nonlimy, gravelly and igh plateau areas, with steep precipitous canyons of barren rock. The area is cold and humid.

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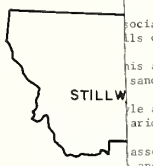

R.14 E.

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T. 7 S.

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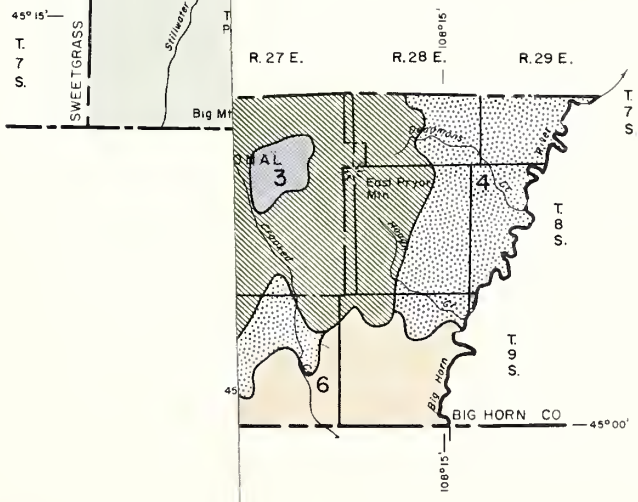
GENERAL SOIL MAP
BEARTOOTH RC&D PROJECT
ARBON AND STILLWATER COUNTIES
MONTANA

APRIL 1969

5 0 5 10

SCALE IN MILES

TRANSVERSE MERCATOR PROJECTION
SOURCE MATERIAL AMS TOPOGS NL 12-6
12-8 & 12-9



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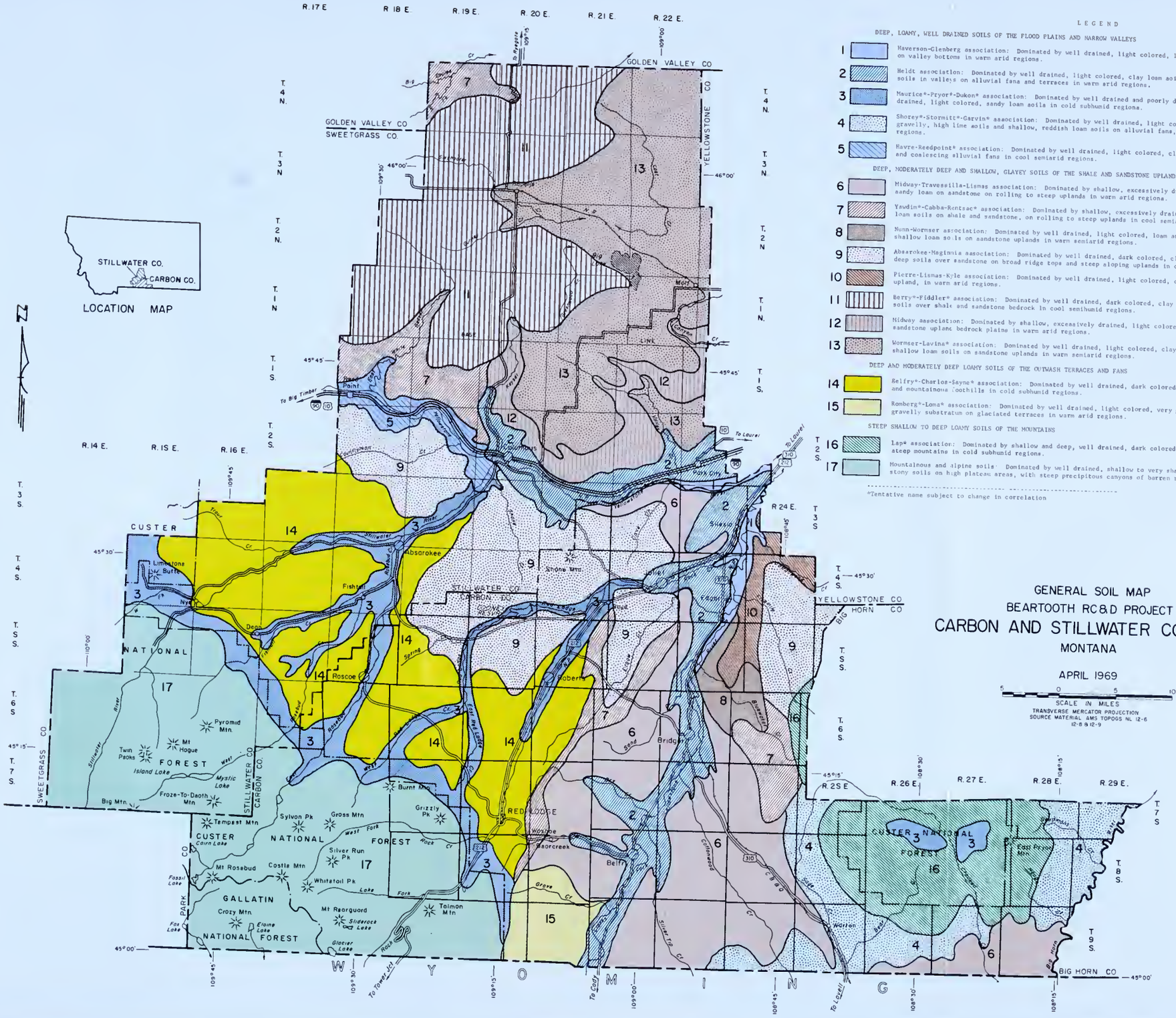

LEGEND

DEEP, LOAMY, WELL DRAINED SOILS OF THE FLOOD PLAINS AND NARROW VALLEYS

1. Haverson-Glenberg association: Dominated by well drained, light colored, loam and sandy loam soils and alkali loam soils on valley bottoms in warm arid regions.
2. Heldt association: Dominated by well drained, light colored, clay loam soils and light colored, very gravelly, high lime soils in valleys on alluvial fans and terraces in warm arid regions.
3. Maurice*-Pryor*-Dukon* association: Dominated by well drained and poorly drained, dark colored, loam soils and well drained, light colored, sandy loam soils in cold subhumid regions.
4. Shorey*-Stormitt*-Garvin* association: Dominated by well drained, light colored, clay loam soils and light colored, very gravelly, high lime soils and shallow, reddish loam soils on alluvial fans, terraces, and rough steep uplands in warm arid regions.
5. Havre-Reedpoint* association: Dominated by well drained, light colored, clay loam soils and loam soils on valley bottoms and coalescing alluvial fans in cool semiarid regions.

DEEP, MODERATELY DEEP AND SHALLOW, GLAYEY SOILS OF THE SHALE AND SANDSTONE UPLANDS

6. Midway-Travessilla-Lismas association: Dominated by shallow, excessively drained, light colored, clay soils on shale, and sandy loam on sandstone on rolling to steep uplands in warm arid regions.
7. Yaudim*-Cabba-Rentsac* association: Dominated by shallow, excessively drained, light colored, clay soils on shale, and loam soils on shale and sandstone, on rolling to steep uplands in cool semiarid regions.
8. Nunn-Wormser association: Dominated by well drained, light colored, loam and clay loam soils with clay subsoils, and shallow loam soils on sandstone uplands in warm semiarid regions.
9. Absarokee-Maginnis association: Dominated by well drained, dark colored, clay loam soils and light colored, moderately deep soils over sandstone on broad ridge tops and steep sloping uplands in cool subhumid regions.
10. Pierre-Lismas-Kyle association: Dominated by well drained, light colored, clay soils on steep and hilly shale bedrock upland, in warm arid regions.
11. Berry*-Fiddler* association: Dominated by well drained, dark colored, clay loam soils and moderately deep and shallow soils over shale and sandstone bedrock in cool semihumid regions.
12. Midway association: Dominated by shallow, excessively drained, light colored, clay soils on shale and sandy loam soils on sandstone uplanc bedrock plains in warm arid regions.
13. Wormser-Lavina* association: Dominated by well drained, light colored, clay loam and loam soils with clay subsoils and shallow loam soils on sandstone uplands in warm semiarid regions.

DEEP AND MODERATELY DEEP LOAMY SOILS OF THE OUTWASH TERRACES AND FANS

14. Belfry*-Charlos-Sayne* association: Dominated by well drained, dark colored, loam soils and sandy soils on steep uplands and mountainous foothills in cold subhumid regions.
15. Romberg*-Loma* association: Dominated by well drained, light colored, very gravelly and stony loam soils with very gravelly substratum on glaciated terraces in warm arid regions.

STEEP SHALLOW TO DEEP LOAMY SOILS OF THE MOUNTAINS

16. Lap* association: Dominated by shallow and deep, well drained, dark colored, loam soils over limestone on sloping and steep mountains in cold subhumid regions.
17. Mountainous and alpine soils: Dominated by well drained, shallow to very shallow, dark colored, nonlimy, gravelly and stony soils on high plateau areas, with steep precipitous canyons of barren rock. The area is cold and humid.

*Tentative name subject to change in correlation

GENERAL SOIL MAP
BEARTOOTH RC&D PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA

APRIL 1969

SCALE IN MILES
5 0 5 10

TRANSVERSE MERCATOR PROJECTION
SOURCE MATERIAL AMS TOPOGS NL 12-6
12-8 & 12-9

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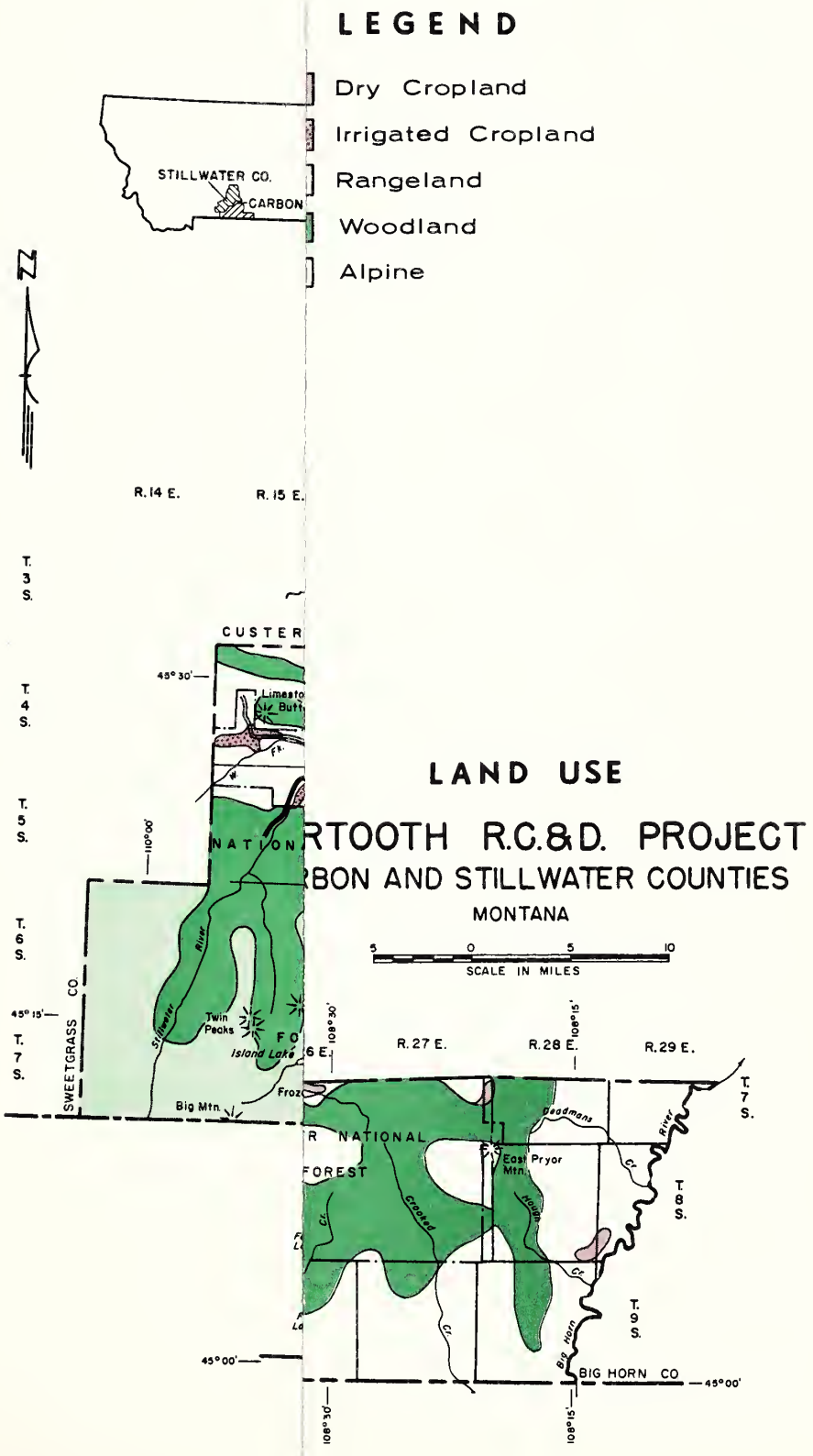
LEGEND
Dry Cropland
Irrigated Cropland
Rangeland
Woodland
Alpine
STILLWATER CO.
CARBON
N
R. 14 E.
R. 15 E.
R. 27 E.
R. 28 E.
R. 29 E.
T. 3 S.
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CUSTER
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Limesto
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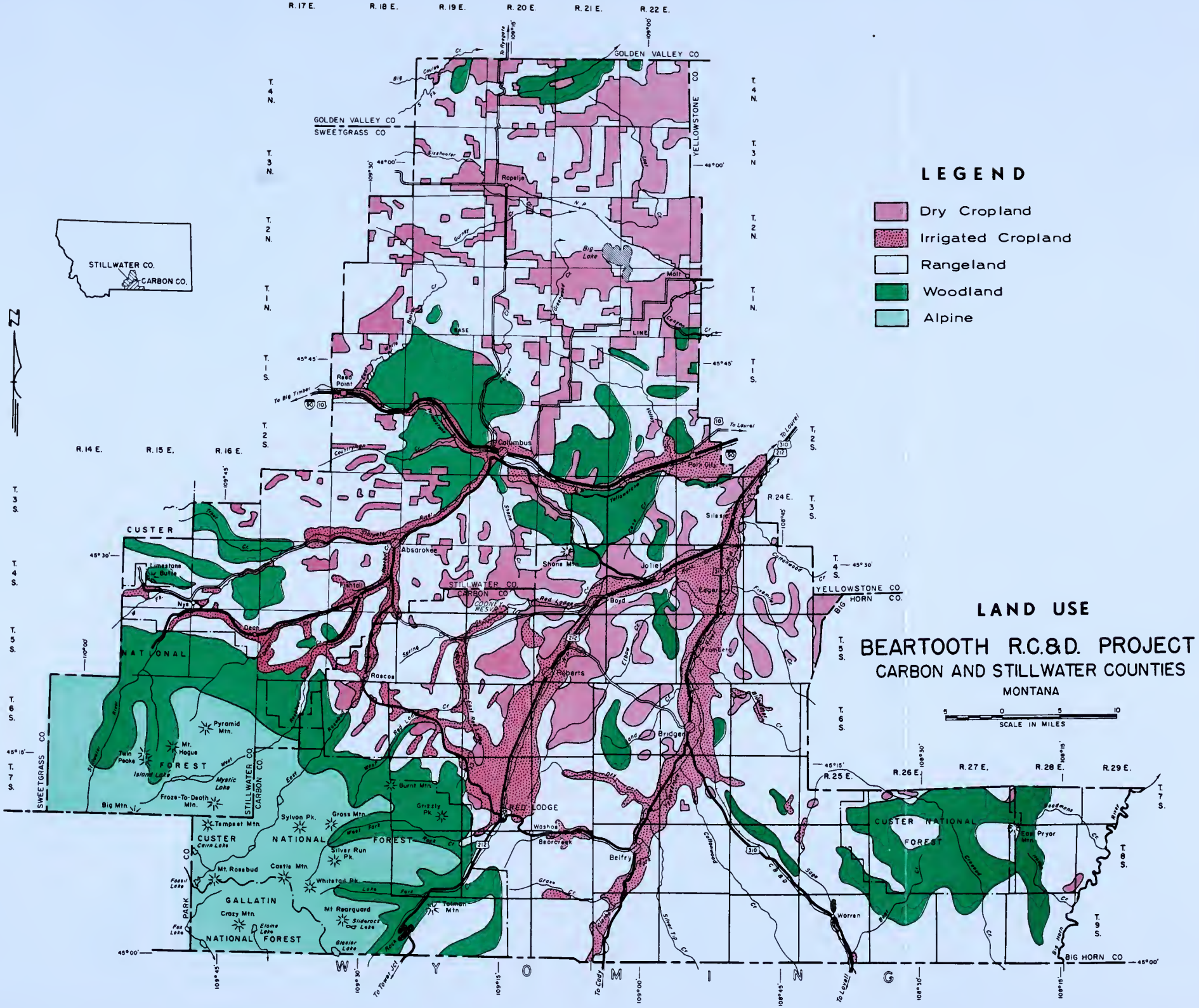
NATION
RTOOTH R.C.&D. PROJECT
BON AND STILLWATER COUNTIES
MONTANA
5 0 5 10
SCALE IN MILES
Stillwater River
Twin Peaks
Island Lake
Big Mtn.
SWEETGRASS CO.
R NATIONAL
FOREST
East Pryor Mtn.
Deadmans
Crooked
Rough
Big Horn
BIG HORN CO
LAND USE


LEGEND
Dry Cropland
Irrigated Cropland
Rangeland
Woodland
Alpine
LAND USE
BEARTOOTH R.C.&D. PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA
SCALE IN MILES
STILLWATER CO.
CARBON CO.
GOLDEN VALLEY CO
SWEETGRASS CO
YELLOWSTONE CO
BIG HORN CO.
CUSTER NATIONAL FOREST
GALLATIN NATIONAL FOREST
RED LODGE
Columbus
Park City
Absarokee
Joliet
Boyd
Roberts
Bridger
Belfry
Warren
Rapelje
Reed Point
Shane Mtn.
Silesia
Fishtail
Nye
Rosebud
Pyramid Mtn.
Mt. Hague
Twin Peaks
Island Lake
Mystic Lake
Froze-To-Death Mtn.
Big Mtn.
Tempest Mtn.
Sylvan Pk.
Gross Mtn.
Burnt Mtn.
Grizzly Pk.
Silver Run Pk.
Mt. Rosebud
Castle Mtn.
Whitetail Pk.
Crazy Mtn.
Mt Rearguard
Tolman Mtn.
Cairn Lake
Fossil Lake
Elaine Lake
Slidercat Lake
Glacier Lake
Lake Fork
Rock Cr.
Washoe
Bearcreek
East Pryor Mtn.
Bodmans
To Big Timber
To Laurel
To Towe Jct.
To Cody
To Lovell
R. 14 E.
R. 15 E.
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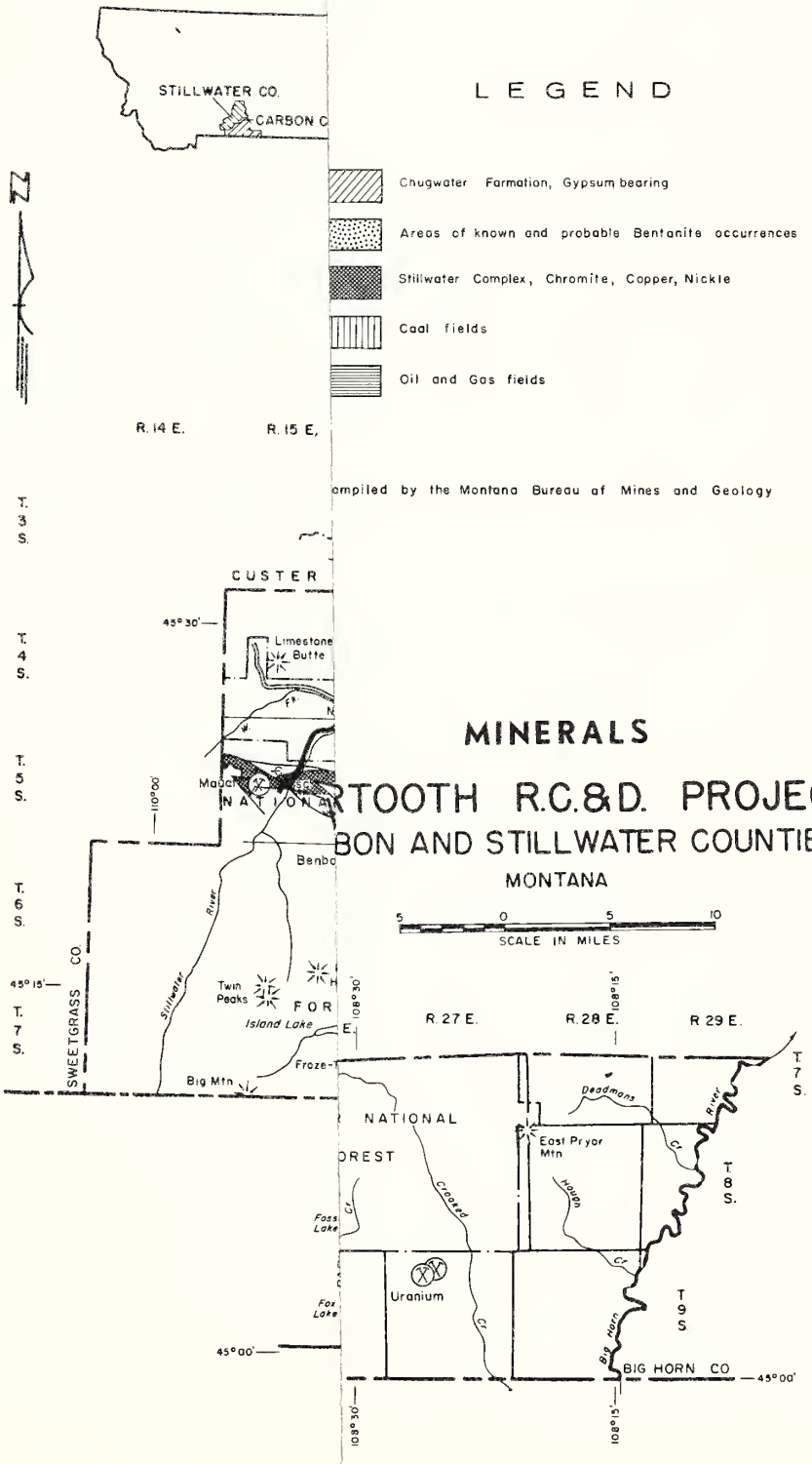
STILLWATER CO.
CARBON C
LEGEND
Chugwater Formation, Gypsum bearing
Areas of known and probable Bentanite occurrences
Stillwater Complex, Chromite, Copper, Nickle
Coal fields
Oil and Gas fields
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ompiled by the Montana Bureau of Mines and Geology
T. 3 S.
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T. 7 S.
CUSTER
45° 30'
Limestone Butte
110° 00'
Benbo
River
Stillwater
Twin Peaks
Island Lake
Froze-
Big Mtn
SWEETGRASS CO.
45° 15'
108° 30'
108° 15'
R 27 E.
R. 28 E.
R 29 E.
NATIONAL
OREST
East Pryor Mtn
Deadmans
Creek
Fox Lake
Uranium
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T 9 S
BIG HORN CO.
45° 00'
MINERALS
RTOOTH R.C.&D. PROJECT
BON AND STILLWATER COUNTIES
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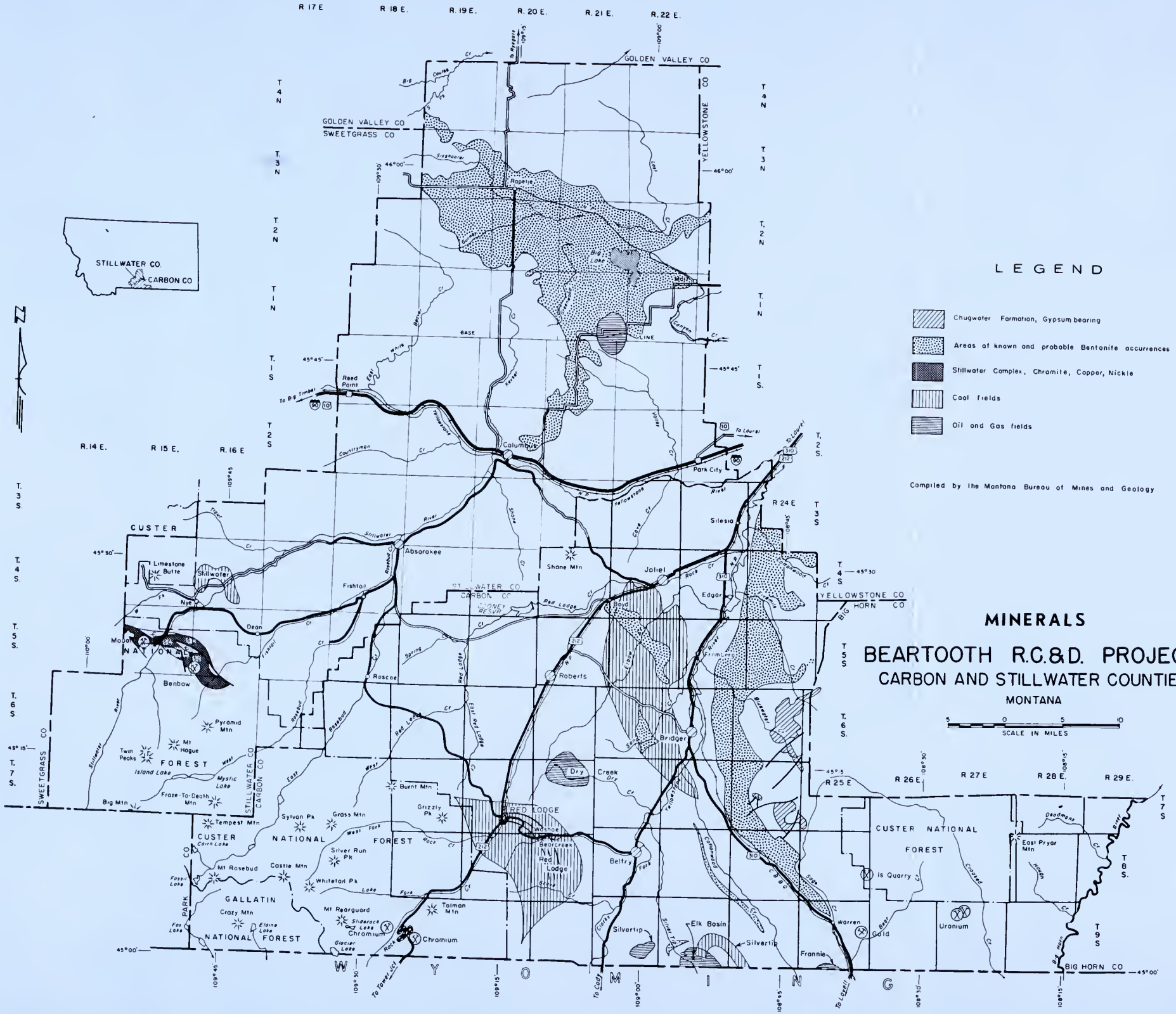
LEGEND
Chugwater Formation, Gypsum bearing
Areas of known and probable Bentonite occurrences
Stillwater Complex, Chromite, Copper, Nickle
Coal fields
Oil and Gas fields
Compiled by the Montana Bureau of Mines and Geology
MINERALS
BEARTOOTH R.C.&D. PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA
SCALE IN MILES
STILLWATER CO
CARBON CO
GOLDEN VALLEY CO
SWEETGRASS CO
YELLOWSTONE CO
BIG HORN CO
CUSTER
PARK CO
GALLATIN
CUSTER NATIONAL FOREST
GALLATIN NATIONAL FOREST
WYOMING
Columbus
Absarokee
Roberts
Bridger
Joliet
Park City
Silesia
Edgar
Fishtail
Dean
Benbow
Roscoe
Red Lodge
Boyd
Shane Mtn
Limestone Butte
Stillwater
Nye
Reed Point
Rapelje
Big Lake
Pyramid Mtn
Mt Hague
Twin Peaks
Island Lake
Mystic Lake
Fraze-To-Death Mtn
Brg Mtn
Tempest Mtn
Sylvan Pk
Grass Mtn
Burnt Mtn
Grizzly Pk
Silver Run Pk
Mt Rosebud
Castle Mtn
Whitetail Pk
Mt Rearguard
Crazy Mtn
Talman Mtn
Chromium
Silvertip
Elk Basin
Warren
Gold
Uranium
Frannie
East Pryor Mtn
Dry Creek
Belfry
Bearcreek
Washoe
Dead Indian Hill
Deadmans
Big Horn
Yellowstone
Stillwater
Rosebud
Red Lodge Cr
Clarks Fork
Silver Tip
Contrary
Coyote
Countryman
Trout
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Sage
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IPITATION MAP

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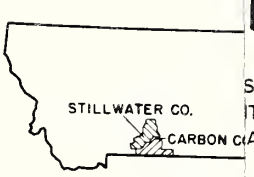
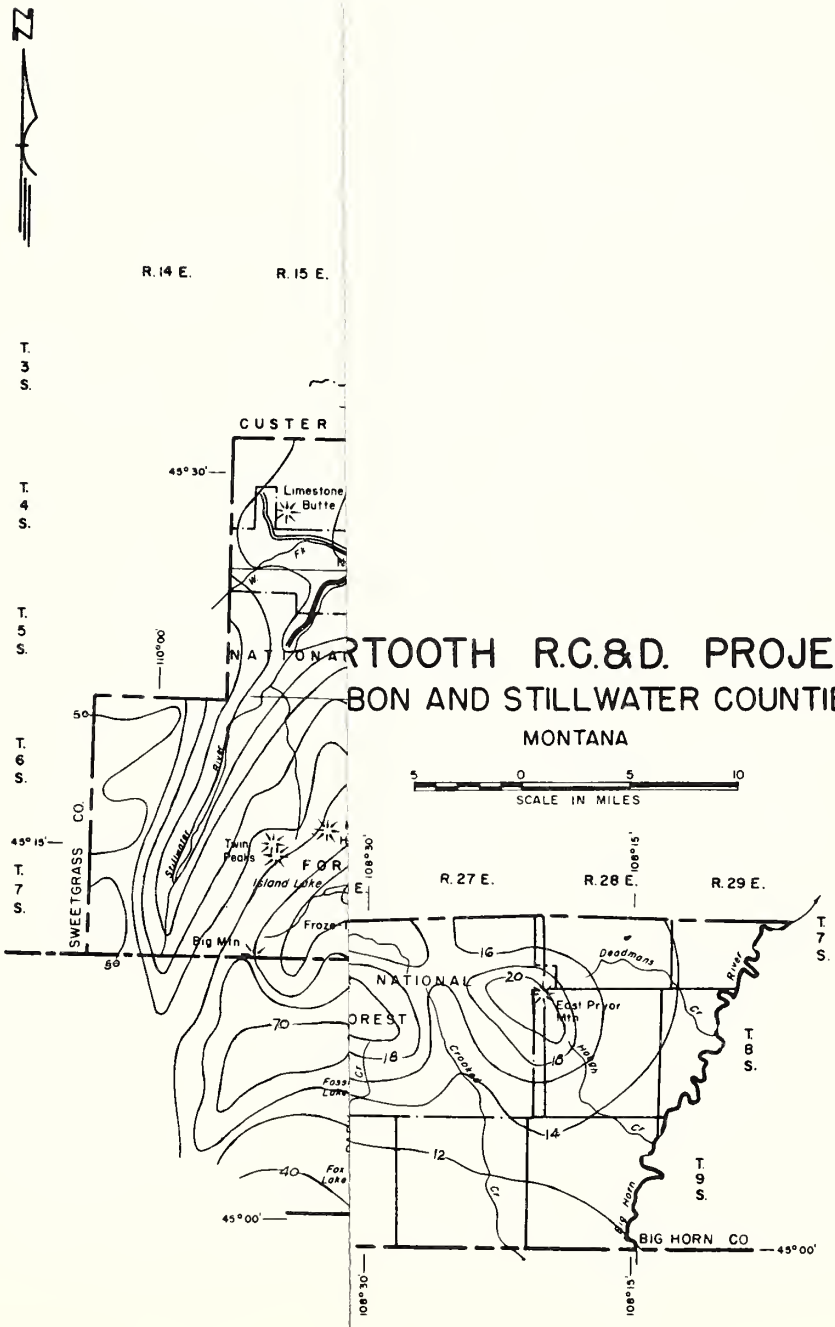
ITATION CONTOURS ARE BASED ON WEATHER
AND SNOW SURVEY STORAGE GAGES.





RTOOTH R.C.&D. PROJECT

BON AND STILLWATER COUNTIES

MONTANA

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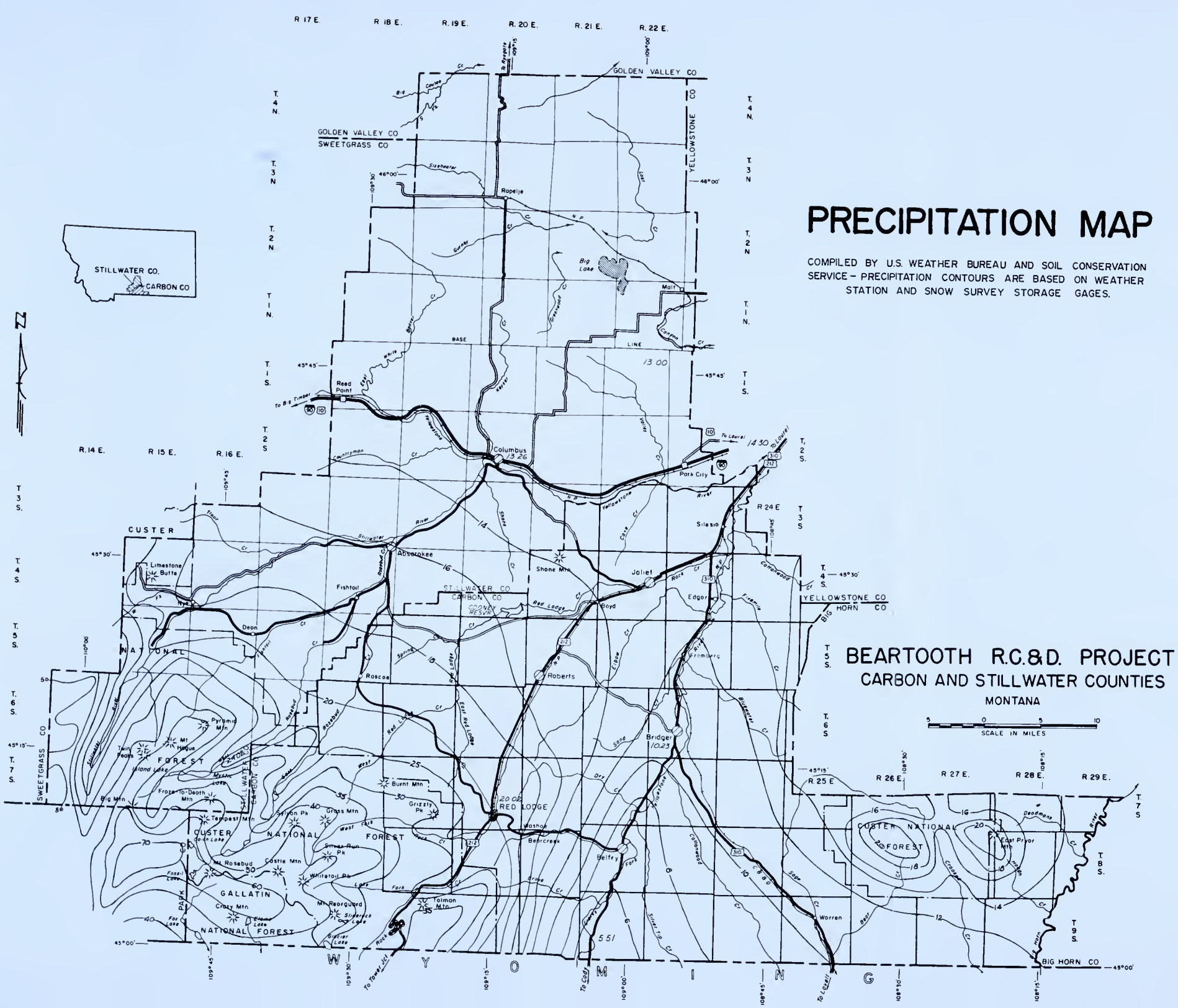
SCALE IN MILES


PRECIPITATION MAP
COMPILED BY U.S. WEATHER BUREAU AND SOIL CONSERVATION SERVICE – PRECIPITATION CONTOURS ARE BASED ON WEATHER STATION AND SNOW SURVEY STORAGE GAGES.
BEARTOOTH R.C.&D. PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA
SCALE IN MILES
STILLWATER CO.
CARBON CO
GOLDEN VALLEY CO
SWEETGRASS CO
YELLOWSTONE CO
BIG HORN CO
STILLWATER CO
CARBON CO
COUNTY RESVR
Rapelje
Reed Point
Columbus 13.26
Park City
Silesia
Absarokee
Shone Mtn
Joliet
Fishtail
Boyd
Edgar
Deon
Rascoe
Roberts
Bridger 10.25
20.08 RED LODGE
Washoe
Bearcreek
Belfry
Worren
Tolman Mtn
Burnt Mtn
Grizzly Pk
Grass Mtn
Sylvan Pk
Tempest Mtn
Froze-To-Death Mtn
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Mt Rosebud
Castle Mtn
Whitetail Pk
Mt Reargoard
Crazy Mtn
Limestone Butte
Big Lake
Malt
Deadmans
Edgar Pryor Mtn
CUSTER NATIONAL FOREST
GALLATIN NATIONAL FOREST
To Big Timber
To Laurel
To Cody
To Lovell
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ECREATION MAP

CESS — Montana Fish, Game and Parks

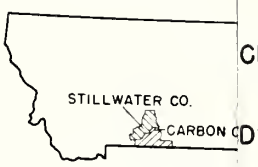
DS — U.S. Forest Service

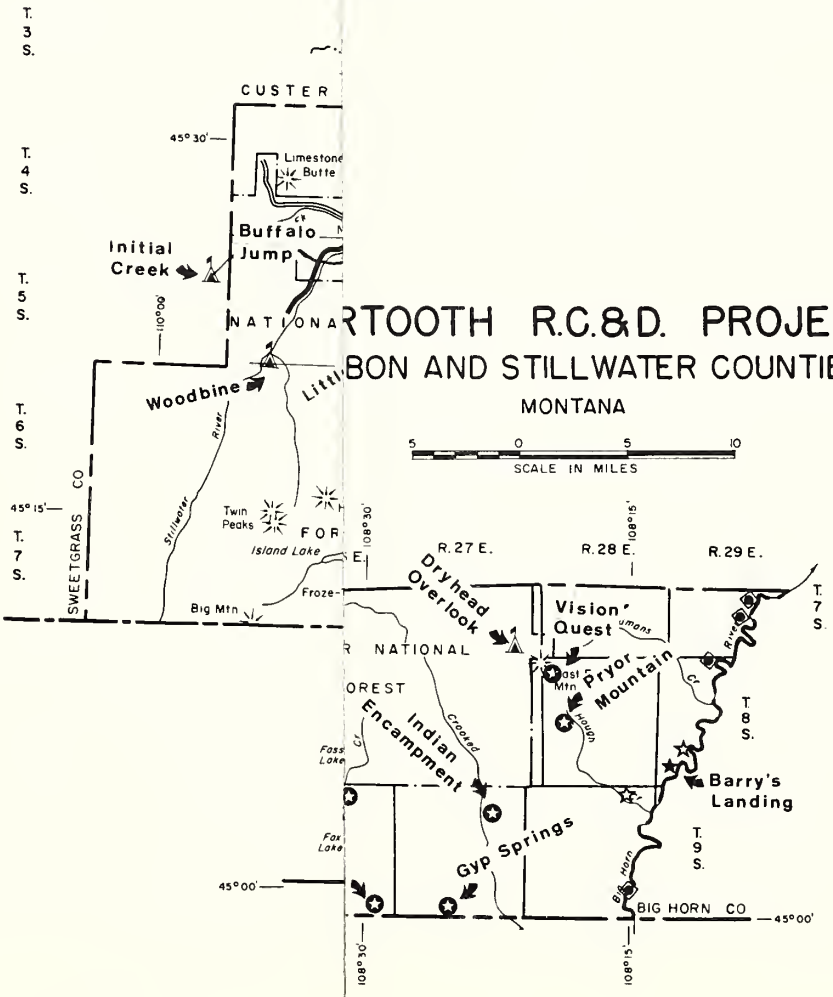
SITES — Bureau of Land Management

STING DEVELOPMENTS

TURE DEVELOPMENTS

ERPRETIVE FACILITY





RTOOTH R.C.&D. PROJECT

BON AND STILLWATER COUNTIES

MONTANA

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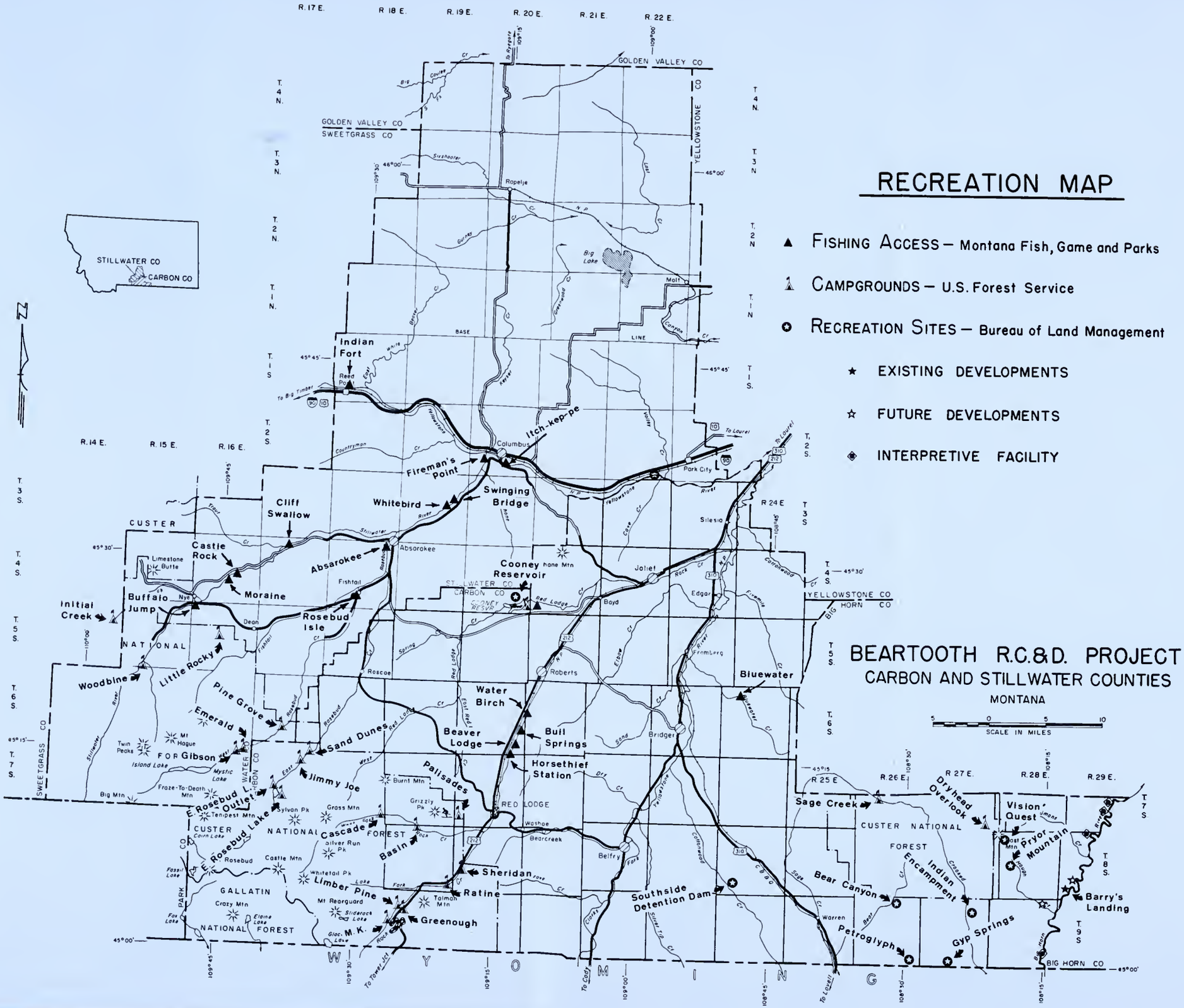
SCALE IN MILES


RECREATION MAP
▲ FISHING ACCESS — Montana Fish, Game and Parks
CAMPGROUNDS — U.S. Forest Service
RECREATION SITES — Bureau of Land Management
★ EXISTING DEVELOPMENTS
☆ FUTURE DEVELOPMENTS
◈ INTERPRETIVE FACILITY
BEARTOOTH R.C.&D. PROJECT
CARBON AND STILLWATER COUNTIES
MONTANA
SCALE IN MILES
STILLWATER CO
CARBON CO
GOLDEN VALLEY CO
SWEETGRASS CO
YELLOWSTONE CO
BIG HORN CO
CUSTER
CARBON CO
STILLWATER CO
WYOMING
CUSTER NATIONAL FOREST
GALLATIN NATIONAL FOREST
Indian Fort
Itch-kep-pe
Fireman's Point
Swinging Bridge
Whitebird
Cliff Swallow
Castle Rock
Moraine
Absarokee
Cooney Reservoir
Initial Creek
Buffalo Jump
Rosebud Isle
Little Rocky
Woodbine
Pine Grove
Emerald
Sand Dunes
Jimmy Joe
Palisades
Water Birch
Beaver Lodge
Bull Springs
Horsethief Station
Bluewater
E. Rosebud Outlet
E. Rosebud Lake
Cascade
Basin
Limber Pine
Ratine
Sheridan
Greenough
Southside Detention Dam
Sage Creek
Dryhead Overlook
Vision Quest
Pryor Mountain
Indian Encampment
Bear Canyon
Barry's Landing
Petroglyph
Gyp Springs
Columbus
Park City
Silesia
Joliet
Edgar
Boyd
Roberts
Fromberg
Bridger
Roscoe
Absarokee
Red Lodge
Belfry
Warren
Washoe
Bearcreek
Rapelje
Molt
Big Lake
Cooney Reservoir
Limestone Butte
Nye
Dean
Fishtail
Twin Peaks
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Tenpeet Mtn
Sylvan Pk
Grass Mtn
Silver Run Pk
Rosebud
Castle Mtn
Whitetail Pk
Crazy Mtn
Mt Rearguard
Talmah Mtn
Glac. M.K. Lake
Burnt Mtn
Grizzly Pk
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Sage Creek
Bear Creek
Rock Creek
Clarks Fork
Sixteen Mile Creek
Big Coulee Cr
Sweetgrass Creek
Big Timber Creek
Yellowstone River
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Rosebud Creek
Red Lodge Creek
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SECTION II DESCRIPTION

Location and Size

The Beartooth Area covers all of Carbon and Stillwater counties located on the south central border of Montana. It is bounded on the east by the Bighorn River and Big Horn and Yellowstone counties, on the north by Golden Valley County, on the west by Sweetgrass and Park counties, and on the south by the State of Wyoming. The most scenic route to Yellowstone National Park is U. S. Highway 212, which passes directly through the Beartooth area.

The project area covers 2,474,880 acres with 1,324,800 acres in Carbon County and 1,150,080 acres in Stillwater County.

The 1960 census lists 13,843 people in the project area. Carbon County had 8,317 people and Stillwater County, 5,526. Both counties have shown an out-migration for more than 30 years.

Various communities show the following population based on the 1960 census or later estimates:

Carbon County		Stillwater County	
Red Lodge*	2,230	Columbus*	1,281
Bridger*	724	Absarokee	600
Joliet*	392	Park City	350
Fromberg*	367	Rapelje	100
Belfry	194	Reed Point	100
Roberts	194	Fishtail	80
Edgar	115	Nye	75
Bearcreek*	63	Molt	20
Silesia	57		

*Incorporated towns

Population

The project area supported 13,843 people in 1960. The entire population is classed as rural by the census criteria because no community has over 2500 people.

Population density in 1960 was 4 persons per square mile in Carbon County and 3 persons per square mile in Stillwater County. The average densities are misleading in that most of the population is concentrated along the irrigated valleys. During the decade, 1950-1960 Carbon County experienced a natural increase of births over deaths of 6 percent but during that same time had a net out-migration of 24.7 percent that resulted in a net population loss of 18.8 percent. During this same decade Stillwater County experienced a natural increase of 13.2 percent and a net out-migration of 11.2 percent resulting in a net gain in population of 2.0 percent. Much of the net out-migration in both counties was made up of younger, better trained families seeking more gainful employment. The closing of the coal mines and technological changes in agriculture leading to declines in agricultural employment were the contributing factors to population loss.

The 1960 levels of education and age characteristics in the project area as compared to State of Montana as a whole are as follows:

	Carbon County	Stillwater County	State of Montana
Persons 25 yrs. & older			
Median yrs. of schooling	10.2	10.7	11.6
Percent with less than 5 yrs. of schooling	7.2	3.7	4.1
Percent completed high school or more	40.6	41.7	47.8
Persons over 65 yrs.	15.0%	11.9%	9.7%

Demographically the area is significantly older than the rest of the state and educationally behind the rest of the state.

Employment

The Beartooth Area is very dominantly agricultural. Over one-third of the labor force is directly employed in agriculture and a large portion of the non-basic employment is engaged in services to agriculture. The distribution of employment in the area is shown in the following table.

The greatest changes in employment from 1950-1967 were agriculture and mining as reflected in the following table for Carbon County. Similar data is not yet complete for Stillwater County.

Employment Change in Carbon County *

	1950*	1960*	Est. 1967	Employment Change 1950-60	Employment Change Est.* 1960-67
Non-Agricultural Employment	1,794	1,832	1,921	38	89
Mining	175	41	41	- 134	0
Construction	171	205	219	34	14
Manufacturing	73	113	120	40	7
Trans., Commu., Util. (including Railroads)	176	209	212	33	3
Wholesale, Retail Trade	541	522	538	- 19	16
F.I.P.E.	40	69	76	29	7
Services	515	537	565	22	28
Government	103	136	150	33	14
Agricultural	1,676	954	830	- 722	- 124
Industry Not Reported	72	154	105	82	- 49
Total Employment	3,027	2,940	2,856	- 602	- 84

* Source: Comprehensive Area Water & Sewer Plan for Carbon County.

Immobility in the remaining labor force, made up in large part by older people, has some influence on the chronic unemployment shown in the following table:

Employment, Unemployment, and Labor Force

	Average Monthly Total Employment	Total Unemployment	Average Monthly Total Labor Force	Average Monthly Unemployment Rate
Carbon County				
1960	2,920	203	3,123	6.51
1961	2,796	247	3,043	8.12
1962	2,964	179	3,143	5.70
1963	3,108	186	3,294	5.65
1964	3,062	165	3,227	5.11
1965	3,154	158	3,312	4.78
1966	3,062	137	3,199	4.28
Stillwater County				
1960	1,963	78	2,041	3.8
1961	2,050	107	2,157	5.0
1962	1,684	109	1,793	6.1
1963-1966 -	Not available			

Source: Montana State Unemployment Compensation Commission

INDUSTRY GROUP OF EMPLOYED*

	Carbon	Stillwater	Totals
Agriculture	945	691	1,636
Forestry & Fisheries	9	4	13
Mining	41	187	228
Construction	205	93	298
Manufacturing	113	86	199
Transportation Express Services & Warehousing	130	101	231
Communications	32	35	67
Utilities & Sanitary Service	47	22	69
Wholesale Trade	46	18	64
Retail Trade	476	247	723
Finance, Insurance & Real Estate	69	35	104
Business Services	4	4	8
Repair Services	50	16	16
Private Household & Personal Services	123	69	192
Entertainment & Recreation Services	38	4	42
Hospitals	56	24	80
Educational Services	224	139	363
Public Administration	136	52	188
Miscellaneous	196	139	335
TOTALS	2,940	1,966	4,906
Percentage of Women in Labor Forces	25.8	26.5	
Worked Outside of County	197	144	341

* Source - U.S. Census of Population - 1960
Developed by Extension Service

Income

If we use the criterion of $3,000 income per family per year as the demarcation between poverty, we find that 998 families out of 3,678 families in the area in 1960 were living in poverty. Over 27 percent were in serious difficulty. Most families with less than $4,000 income per year spend virtually all of that income on the necessities of food, clothing, shelter, transportation and medical care. In this area 1,535 families or 41.7 percent fell in this category. The median family income per family in Carbon County was $4,336 and for Stillwater County was $4,790 as compared to $5,403 for the State of Montana.

There were 198 recipients of public assistance in Carbon County and 81 recipients in Stillwater County. Further examination reveals that only 233 families in the entire two county area had incomes of over $10,000 per year. The distribution of families by levels of income is shown on the following table.

GENERAL SOCIAL & ECONOMIC CHARACTERISTICS *

Family Income for 1959 - All Families

Total Family Income	Carbon	Stillwater	Total
Under $1,000	206	65	271
1 - 1999	216	140	356
2 - 2999	252	119	371
3 - 3999	326	211	537
4 - 4999	329	245	574
5 - 5999	323	192	515
6 - 6999	189	178	367
7 - 7999	115	79	194
8 - 8999	86	82	168
9 - 9999	54	38	92
10 & over	125	108	233
TOTALS	2,221	1,457	3,678
Median Income	$4,336	$4,790	
Public Assistance Recipients	198	81	279

*Source: U.S. Census of Population
Developed by Extension Service

Use of Agricultural Resources:

Productivity is partially indicated in the distribution by economic class and the high incidence of off farm employment. On the basis that it takes $10 or more of sales to return a net disposable income of $3, all farms in the economic classes IV, V and VI are poverty farms. In Carbon County this comprised 60.4 percent of the farms and in Stillwater County it comprised 45.4 percent in 1964.

Data on land use in farms and ranches are shown in the following table.

Farm Economic Studies:

Cost and return studies of irrigated crops in Carbon, Stillwater, and Yellowstone counties have just recently been completed by the Cooperative Extension Service.

The information, regarding the costs of growing irrigated crops, in this study was based on average conditions for the area. Yield and efficiency in operations were for the upper one-third of management. Although these estimates can vary widely between farms and ranches, there are certain conclusions that can be drawn from the study.

During the past 10 to 15 years farm costs have been on a continuous increase while the gross returns received for their products have increased very little. The net return to the farmer has been on the decline.

This small margin of profit will vary between enterprises and size of farm unit. Some farm enterprises will have a reasonably large margin of return when expanded to certain levels of production while others show a negative return. In many cases one enterprise is being supported by another one without the manager realizing it.

These situations have caused many changes in agriculture needs. A more complete farm record keeping system will show the farm enterprises not paying their way. Many diversified operations could use a computerized farm account system with enterprise cost accounting.

Studies show the majority of farms are not receiving a 6% return on their investment for land and operating capital. In the past year land values in Montana have increased about 4%. This has been of some benefit to established farm operators since it has increased their net worth and given them greater borrowing power. On the other hand, rapidly increasing land values have almost eliminated the possibility for young men without capital to become established in farming. The trend is for larger and fewer farms in the area.

The ever increasing cost of machinery and equipment has raised the fixed costs of ownership of many implements to a point they must be used continually during the summer months to make their ownership feasible. We anticipated if this trend continues we will see more custom work done in the area.

The cost-return study indicates that a farm operator must achieve a very high yield to realize a net profit on most crops grown in the area.

There is indication that some of the long time grown irrigated crops in the area show very low net return as compared to some other crops. Changes in some cropping systems will in turn have an effect on markets and processing facilities of the area.

Land Ownership and Use

Land in private, county, or state ownership amounts to 1,762,138 acres or 71%. The remaining 712,742 acres or 29% is in federal ownership.

The following acreages show land use on private lands:

Towns, roads and water	25,298
Non-agricultural	15,178
Dry cropland	316,654
Irrigated cropland	109,698
Range and pasture	1,184,244
Woodland	111,066
	1,762,138

There are 1,238 farms in the Beartooth area, 35% of them range in size from 1 to 100 acres. Seventy percent or 859 farms irrigated some or all of their land. Of the irrigated farms 48% range in size from 1 to 100 acres. Thirty-five percent of the farms classify as grain farms, 25% as livestock as grain farms, 25% as livestock and dairy and 40% are combination and other farms.

AGRICULTURAL STATISTICS - 1964 *

	Carbon	Stillwater	Totals
Farms	749	489	1,238
Approx. Land Area	1,324,800	1,150,080	2,474,800
Proportion in Farms	50.8	77.9	
Land in Farms	672,956	896,349	1,569,305
Average Size of Farms	898.5	1,833.0	
Value of Land and Buildings:			
Per Farm	64,450	100,950	
Per Acre	72.72	55.32	
Cropland Harvested	101,224	117,844	219,068
Irrigated Land (All types)	96,363	30,845	127,208
Farms by size:			
260-499 acres	163	66	229
500-999 acres	133	85	218
1000-more acres	164	227	391
Farm Operators:			
Full owners	420	209	629
Part owners	215	218	433
Managers	...	6	6
All Tenants	144	56	200
Average age of all Farm Operators	49.9	50.5	
Farm Operators over 65	89	79	168
FARMS BY ECONOMIC CLASS	654	421	1,075
Class I, sales $40,000 or more	26	28	54
Class II, $20,000-$39,999	67	70	137
Class III, $10,000-19,999	166	132	298
Class IV, $5,000-$9,999	225	97	322
Class V, $2,500-$4,999	123	66	189
Class VI, $ 50 - $2,499	47	28	75
Percent Class IV and Below	60.4	45.4	
Part time Operators	54	33	87
Part Retirement	41	35	76
Worked off of Farm 100 Days or More	117	73	190

*Source: Census of Agriculture
Developed by Extension Service

The most recent inventory of private land use is shown in the following table.

Land Use of Inventoried Acreage

Land Use	Carbon Co.	Stillwater Co.	Total
Corn or Sorghum	2,082	1,400	3,482
All other row crops	14,247	1,650	15,897
Small grain	48,858	92,935	141,793
Summer Fallow	34,214	91,500	125,714
Rotation Hayland & Pasture	4,000	14,800	18,800
Hayland	70,987	30,000	100,987
Conservation use only	4,066	2,743	6,809
Temporary idle land	500	2,000	2,500
Orchards	320	50	370
Abandoned cropland	---	10,000	10,000
TOTAL cropland	179,274	247,078	426,352
Pasture land	19,704	14,681	34,385
Range land	539,074	610,785	1,149,859
TOTAL pasture and range	558,778	625,466	1,184,244
Commercial woodland	28,623	39,916	68,539
Noncommercial woodland	13,971	28,556	42,527
TOTAL woodland	42,594	68,472	111,066
Other land (in farms)	8,400	2,735	11,135
Other land (not in farms)	1,903	2,140	4,043
TOTAL other	10,303	4,875	15,178
TOTAL	790,949	945,891	1,736,840

Public Facilities:

There are seven small high schools in Carbon County and five in Stillwater County. Some form of consolidation for better quality education is indicated, but as yet no workable or acceptable approach has been presented. The analyst must be cautious in realizing that the investments in physical school plants now existing is a sunk investment and consolidation will require new investments. The counties have a good network of surfaced and all-weather graveled roads so bus routes are possible.

There is ample distribution of natural gas to the towns and to some farms enroute. Electricity is distributed by the Montana Power Company and the Beartooth Rural Electrical Cooperative. Nearly all farms have telephone service. Some towns lack municipal water. Most towns are without municipal sewage disposal.

Transportation:

Railroad freight service is provided by the Northern Pacific Railroad in Stillwater County and parts of Carbon County and by the Burlington Railroad in southeastern Carbon County. The only passenger depot is on the Northern Pacific Railroad at Columbus. Bus service is available daily from the larger towns. No commercial airlines operate in either county. There are community airports at Red Lodge, Bridger and Columbus. The runways are insufficient for commercial aircraft larger than DC-3s. Regular commercial flights are available at the Billings airport about 15 miles from the northeast corner of the area. A few ranches have their own private landing strips.

Topography

Five principle drainage areas exist in the project area. Yellowstone, Clarks Fork, and Stillwater Rivers, and Rock and East Rosebud Creeks.

The Yellowstone originates in Yellowstone Park, as the outlet of Yellowstone Lake, largest fresh water body at that elevation in the world, and flows through the central part of the project area, west to east. The Clarks Fork originating in the Beartooth Mountains at Broadwater Lake, its headwaters, flows south to north, south of the Yellowstone River, joining the Yellowstone just east of the area. The Stillwater originates in the Stillwater Basin high in the Beartooth Mountains, flows south to north and joins the Yellowstone at Columbus. All these rivers have tributaries which are used for irrigation as well as the major rivers.

In the south-central portion of the project lies the Pryor Mountains with the south slopes draining into the Yellowtail Reservoir and the north slopes draining into the Clarks Fork River. The north slopes of the Beartooth drain into the Clarks Fork and the Stillwater Rivers.

The valleys are irrigated and the terrain that is fairly level is used for dryland crops and the remainder is rangeland.

Three important highways traverse the area; Interstate 90, a transcontinental highway following the Yellowstone River valley, U. S. 310 following the Clarks Fork River, entering Wyoming near Warren, and U. S. 212 following Rock Creek through Red Lodge crossing the Beartooth Mountains at an elevation of 10,962 feet at the northeast entrance to Yellowstone National Park. This highway is one of the most scenic and spectacular in the United States.

Geology

Geologically, Stillwater and Carbon Counties are complex, and geologic formations exposed at the surface range in age from the very oldest (Precambrian) to very young (Tertiary). At least 30 separate geologic formations have been named and described. Some igneous and metamorphic rocks are present, but the bulk of the formations exposed are of sedimentary origin--sandstone, shale, and limestone.

The southwest corner of the two-county area is occupied by the Beartooth Plateau, an uplifted block of very ancient (Precambrian) gneiss and schist. Elsewhere in Montana, these rocks are hosts to important metalliferous mineral deposits, and although production in this area has as yet not been important, the potential is great. On Hell Roaring Plateau southwest of Red Lodge, chromite deposits are known to occur. To the northwest between Fishtail Creek and West Fork of Stillwater River, is the Stillwater Complex of ultrabasic igneous rocks, which are the host rocks of chromite, copper-nickel, and platinum deposits. The chromite has been mined in the past and the copper-nickel deposits now being developed show considerable promise.

To the northeast of the Beartooth Plateau is a downwarp of sedimentary strata known as the Reed Point syncline, which crosses the county in a N. 35° W. direction from the Wyoming boundary through Reed Point in Stillwater County and beyond. The southwest margin is marked by the Beartooth overthrust fault. In the central part of this syncline, the surface rock is the Fort Union Formation, which contains the high-grade bituminous coal deposits of Red Lodge and Bridger. The economic importance of these coal deposits is overshadowed by the lower-grade, but more cheaply mined strippable coal deposits of eastern Montana. The Dry Creek, Elk Basin, and Frannie oil fields are found at the southeast end of this synclinal area. Uranium has been reported in the Beartooth thrust area, and the Wasatch and Fort Union Formations there may be favorable areas to prospect for that radioactive element.

Surface rocks in that half of the two-county area northeast of the Reed point syncline are gently dipping Cretaceous sandstone and shale beds folded over an anticlinal structure, of which Big Coulee-Hailstone Dome is the prominent expression to the northwest and the Pryor Mountain uplift to the southeast. Some Jurassic, Triassic, and Paleozoic sandstone, shale, and limestone beds are exposed in the Pryor Mountain uplift. The Cretaceous shale beds west of Fromberg yielded clay for a brick plant, which formerly operated in that area. The Triassic Chugwater Formation is a potential source of high-grade gypsum. The (Mississippian) Madison Limestone is being quarried northeast of Warren as a source of lime for sugar refining. The Lake Basin oil and gas field is in

northeastern Stillwater County. Uranium was once mined in the collapsed caverns of the upper part of the Madison Formation in the Carbon County section of the Pryor Mountains, and uranium exploration is currently active in that area. Bentonite is widespread in the upper units of the Cretaceous, but the beds are thin and the material is inferior to that in deposits elsewhere in the State. Nevertheless, some of the deposits could provide bentonite suitable for use locally in sealing irrigation ditches and stock ponds.

CLIMATE

Carbon and Stillwater counties have a topography ranging from flat valley bottoms north and east to extremely mountainous country south to west of Red Lodge. Some of Montana's highest mountain peaks are located in the southwestern portion of the counties, several with elevations greater than 12,000 feet above sea level. The southeast corner of Carbon County is also mountainous (Pryor Mountains, peaks up to 9,000 feet). Elevations range from 12,610 feet at Silver Run Peak southwest of Red Lodge down to 3,300 feet along the Yellowstone River southwest of Laurel. Drainage is generally toward the north or east, except for northern Stillwater County where the drainage is generally south toward the Yellowstone River. However, in mountainous areas, drainages (particularly some of the smaller ones) can be found running in almost any direction.

In Stillwater County the primary streams are the Yellowstone River, east-southeastward through the middle of the county, and the Stillwater River, which enters the county on the south in mountainous terrain and flows northeastward into the Yellowstone River near Columbus. The primary streams in Carbon County are Rock Creek, running north-northeastward from Red Lodge, and the Clarks Fork of the Yellowstone, which enters the county on the south from Wyoming and flows generally northward passing near the towns of Belfry, Bridger and Edgar. Rock Creek has its confluence with the Clarks Fork River in Carbon County, while the Clarks Fork River joins the Yellowstone just southeast of Laurel in Yellowstone County. This complex of mountains and streams is very important to the climate of the area. In the broadest sense, the climate of the counties has to be classed as "continental," but there are several important modifications described below -- most of which are more or less direct results of mountain-valley-plain configurations.

In both precipitation and temperature pattern, elevations and directions of slopes play a primary role. Precipitation variations are particularly noteworthy across the mountainous southern parts of the counties, annual totals ranging from about 65 inches for a 12-year period at a mountain location 18 miles southwest of Red Lodge downward to a 10-year 5.51 average along the Clarks Fork nine miles south-southwest of Belfry. Only about 25 miles separate these two points, and it may well be that the Belfry section of the Clarks Fork Valley is the driest part of Montana. One need only look to topography for possible reasons. The "rain shadow" effect, near Belfry, of the very high mountains during the prevailing west to southwest flow has to be considerable; and when the wind pattern reverses, the northeast upslope component at Red Lodge, for example, exceeds by several times the gradual slope up the Clarks Fork Valley at Belfry. Northward from the mountains precipitation also decreases, but less markedly -- to less than 14 inches near

and north of the Yellowstone River.

During the cold season nearly all precipitation falls as snow. At the lower elevations snow seldom remains on the ground very long, but in the mountains and foothills snow begins accumulating in November most years, reaching greatest depths and water contents in March or early April. The melting of these mountain snowpacks during spring and early summer contributes in a large way to the stable and usually plentiful runoff experienced in most years in Northern Rocky Mountain country such as Carbon and Stillwater counties, assuring interests along all principal drainages of plenty of water during midsummer when water needs are greatest. In an occasional year, heavy rains in late May or early June may coincide with periods of peak runoff, and about one year in 10 this combination will cause some degree of flooding in some streams.

Rains of a steady (several hours) charcter may occur in any year April - June, but summer precipitation almost always is showery. Cold season snows tend to be heaviest in late fall or early spring -- the heaviest snowfall months at Red Lodge, for example, are March and April -- nearly 40 inches for those two months in a yearly average total of a little over 100 inches. Average snowfall in the mountains is estimated to reach totals of several hundred inches, decreasing to less than 50 inches a year in lower northern parts of the counties.

The range in temperatures across the counties is fairly large. The mountain country southwest of Red Lodge no doubt averages less than 40°, while along the Yellowstone River annual averages reach about 47°. In most of the areas summertime warmth is fairly steady, seldom reaching oppressive levels. Red Lodge, for example, in a sample 30-year period, averaged only three days per year with maximums 90° or warmer, while at lower elevations in the north this frequency may approach 20 or 25 days. Also at Red Lodge, the same 30 years averaged only 26 days a year with low temperatures zero or colder. The 32° freeze-free season at Red Lodge averages 104 days from June 5 to September 17, but may run as long as 130 days along the Yellowstone (May 16 - September 24). Hardier crops (able to withstand temperatures down to 24° for short periods) will find seasons averaging as long as 180 days in more favored locations.

Much of the area is favorably situated with respect to the so-called "Chinook" winds of the Northern Rockies. When this wind develops following a winter cold spell, warming can be rapid -- as

much as 40 to 50 degrees in less than a day. The ease with which this wind condition develops tends to shorten winter cold spells - seldom does an invasion of really cold Arctic air last more than three days. In some of the mountain valleys this particular wind type can develop considerable strength -- perhaps as strong as 100 mph gusts in local, more exposed areas. Severe storms, as such, are not common; however, hailstorms, high winds, heavy snows, freezing rain and sleet, and tornadoes have been observed, at intervals of several years, somewhere in the counties. Hail of damaging strength or size occurs one year in 10 along the lower elevations to the south. Tornadoes are rare and when observed they have always been small, and mostly in the northern half of the counties. But as a whole the counties are not located in an unusually stormy area.

SOILS

In the Beartooth RC&D there are differences in topography, kinds of plants, and other features that are obvious, and also differences in the patterns of soils that are less easily seen. A general soil map of the area was made by drawing lines around these patterns of soils. Each pattern is called a soil association. As a rule, each association contains one or more major soils and several minor ones in a pattern that is characteristic, but not strictly uniform. Because of the relief, the depth to and nature of bedrock, and other features, the soils within any association are likely to differ greatly from short distances. Thus, the general soil map does not show the kind of soil at any particular place, but it shows patterns made up of soils of different kinds. Soil associations are named for the major soil series in them, but soils of other series may occur in the association. Also, soils of a major series in one association may occur in any other association, but in a different pattern or extent.

The seventeen soil associations in the Beartooth RC&D have been placed in four main groups, as shown on the legend for the general soil map. In the first group are soils of the flood plains and narrow valleys; in the second, soils of the shale and sandstone uplands; in the third, soils of the outwash terraces and fans; and in the fourth, soils of the mountains.

The general soil map was compiled from information available from detailed soil maps and field soil survey notes made in Carbon and Stillwater Counties.

The general soil map is useful to people who want a general idea of the soils of the area, who want to compare different parts of the area, or who wish to know the location of large tracts that are suitable for a certain kind of farming or other land use. The general soil map is not suitable for planning the management of a farm or field, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage and other characteristics that affect management.

SOIL ASSOCIATIONS

DEEP, LOAMY, WELL DRAINED SOILS OF THE FLOOD PLAINS AND NARROW VALLEYS.

1. Haverson - Glenberg association:

   This association comprises about 24,800 acres or about 1 percent of the project area. It is dominated by well drained, light colored loam and sandy loam soils, and alkali loam soils on valley bottoms. Elevation ranges from 3000 to 3500 feet. The annual precipitation is 10 to 13 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 120 to 130 days. The soils in this association are used primarily for growing row crops, small grains, hay and pasture. Haverson soils are most extensive and comprise about 60 to 70 percent of the association.

2. Heldt association:

   This association comprises about 173,300 acres or about 7 percent of the project area. It is dominated by well drained, light colored clay loam soils and light colored, very gravelly, high lime soils. It occurs in valleys, and on alluvial fans and terraces. Elevation ranges from 3000 to 4000 feet. The annual precipitation is 5 to 12 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 120 to 130 days. The soils in this association are used primarily for growing row crops, small grains, hay and pasture. Heldt soils are most extensive and comprise about 60 to 70 percent of the association.

3. Maurice* - Pryor* - Dukon* association:

   This association comprises about 198,000 acres or about 8 percent of the project area. It is dominated by well drained and poorly drained, dark colored loam soils, and well drained light colored sandy loam soils. Elevation ranges from 4000 to 6000 feet. The annual precipitation is 18 to 22 inches; mean annual soil temperature is 45 to 47° F. The frost free season is 90 to 110 days. The soils in this association are used primarily for range, irrigated pasture, meadow hay, and a small acreage for small grain. Maurice soils are most extensive and comprise about 50 to 60 percent of the association.

4. Shorey* - Stormitt - Garvin* association:

   This association comprises about 99,000 acres or about 4 percent of the project area. It is dominated by well drained, light colored clay loam soils and light colored, very gravelly, high lime soils and shallow reddish brown loam soils. It occurs on alluvial fans, terraces and rough steep uplands. Elevation ranges from 3500 to 5000 feet. The annual precipitation is 10 to 14 inches; mean annual soil temperature is 45 to 47° F.

The frost free season is 110 to 120 days. The soils in this association are used primarily for range, hay and a small acreage for irrigated pasture. Shorey and Stormitt soils are most extensive and comprise about 80 to 90 percent of the association.

5. Havre* - Reedpoint* association:

This association comprises about 173,300 acres or about 7 percent of the project area. It is dominated by well drained, light colored clay loam soils and loam soils. It occurs on valley bottoms and coalescing alluvial fans. Elevation ranges from 3500 to 3800 feet. The annual precipitation is 12 to 15 inches; mean annual soil temperatures are 45 to 47° F. The frost free season is 110 to 120 days. The soils in this association are used primarily for growing small grains, hay and pasture. Havre and Reedpoint soils are the most extensive and comprise about 70 to 80 percent of the association.

DEEP, MODERATELY DEEP, AND SHALLOW CLAY SOILS OF THE SHALE AND SANDSTONE UPLANDS.

6. Midway - Travessilla - Lismas association:

This association comprises about 247,500 acres or about 10 percent of the project area. It is dominated by shallow excessively drained, light colored clay soils on shale and sandy loam soils on sandstone, on rolling to steep uplands. Elevation ranges from 3500 to 5000 feet. The annual precipitation is 6 to 12 inches; mean annual soil temperature is 45 to 47° F. The frost free season is 120 to 130 days. The soils in this association are used primarily for range. Midway soils are the most extensive and comprise about 60 to 70 percent of the association.

7. Yawdim* - Cabba - Rentsac* association:

This association comprises about 24,800 acres or about 1 percent of the project area. It is dominated by shallow, excessively drained, light colored clay soils on shale and sandstone. This association is on rolling to steep uplands. Elevation ranges from 3500 to 4500 feet. The annual precipitation is 15 to 19 inches; mean annual soil temperature is 45 to 47° F. The frost free season is 90 to 110 days. The soils in this association are used primarily for range. Yawdim and Cabba soils are most extensive and comprise about 70 to 80 percent of the association.

8. Nunn - Wormser association:

This association comprises about 24,800 acres or about 1 percent of the project area. It is dominated by well drained, light colored loam and clay loam soils with clay subsoils, and shallow

loam soils on sandstone. Elevation ranges from 3500 to 4000 feet. The annual precipitation is 10 to 12 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 120 to 130 days. The soils in this association are used primarily for growing row crops, small grains, hay and pasture. Nunn soils are the most extensive and comprise about 60 to 70 percent of the association.

9. Absarokee - Maginnis association:

This association comprises about 346,500 acres or about 14 percent of the project area. It is dominated by well drained, dark colored clay loam soils and light colored moderately deep soils over sandstone. This association is on broad ridge tops and steep sloping uplands. Elevation ranges from 3500 to 4500 feet. The annual precipitation is 15 to 19 inches; mean annual soil temperature is 45 to 47° F. The frost free season is 110 to 120 days. The soils in this association are used primarily for growing dryland crops. Small grains and range grasses are the principal crops. Absarokee soils are most extensive and comprise about 60 to 70 percent of the association.

10. Pierre - Lismas - Kyle association:

This association comprises about 49,500 acres or about 2 percent of the project area. It is dominated by well drained, light colored clay soils on steep hilly shale bedrock uplands. Elevation ranges from 3500 to 4000 feet. The annual precipitation is 12 to 16 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 110 to 115 days. The soils in this association are used primarily for range. Pierre and Lismas soils are most extensive and comprise about 70 to 80 percent of the association.

11. Berry* - Fiddler* association:

This association comprises about 198,000 acres or about 8 percent of the project area. It is dominated by well drained, dark colored clay loam soils and moderately deep and shallow soils over shale and sandstone bedrock. Elevation ranges from 4000 to 4500 feet. The annual precipitation is 12 to 15 inches; mean annual soil temperature is 45 to 47°F. The frost free season is 110 to 120 days. The soils in this association are used primarily for dryland grain crops, range and pasture. Berry soils are the most extensive and comprise about 60 to 70 percent of the association.

12. Midway association:

This association comprises 24,800 acres or about 1 percent of the project area. It is dominated by shallow, excessively

drained, light colored clay soils on shale and sandy loam soils on sandstone upland bedrock plains. Elevation ranges from 4000 to 4500 feet. The annual precipitation is 12 to 14 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 110 to 120 days. The soils in this association are used primarily for grazing. Midway soils are most extensive and comprise 70 to 80 percent of the association.

13. Wormser - Lavina* association:

This association comprises 74,300 acres or about 3 percent of the project area. It is dominated by well drained, light colored clay loams and loam soils with clay subsoils and shallow loam soils on sandstone uplands. The annual precipitation is 12 to 15 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 110 to 120 days. The soils in this association are used primarily for growing small grains and range. Wormser soils are most extensive and comprise about 60 to 70 percent of the association.

DEEP AND MODERATELY DEEP LOAMY SOILS OF THE OUTWASH TERRACES AND FANS.

14. Belfry* - Charlos - Sayne* association:

This association comprises 222,800 acres or about 9 percent of the project area. It is dominated by well drained, dark colored, loam soils, and sandy soils. It occurs on high terraces, steep uplands and mountain foothills. Elevation ranges from 4000 to 6000 feet. The annual precipitation is 16 to 22 inches; mean annual soil temperature is 40 to 45° F. The frost free season is 90 to 110 days. The soils in this association are used primarily for growing small grains, meadow hays, pasture and range. Belfry soils are extensive on the steeper landscapes, and Charlos soils are extensive on the high terraces. These two soils make up about 70 to 80 percent of the association.

15. Romberg* - Loma* association:

This association comprises about 49,500 acres or about 2 percent of the project area. It occurs on glaciated terraces and is dominated by well drained, light colored, very gravelly and stony loam soils with very gravelly substratum. Elevation ranges from 3500 to 5000 feet. The annual precipitation is 5 to 12 inches; mean annual soil temperature is 47 to 49° F. The frost free season is 110 to 120 days. The soils in this association are used primarily for grazing. A small acreage is used for growing hay and small grains. Romberg soils are the most extensive and comprise about 60 to 70 percent of the association.

STEEP, SHALLOW TO DEEP LOAMY SOILS OF THE MOUNTAINS.

16. Lap* association:

This association comprises about 99,000 acres or about 4 percent of the project area. It is dominated by shallow and deep well drained, dark colored loam soils over limestone on sloping to steep mountains. Elevation ranges from 5000 to 9000 feet. The annual precipitation is 12 to 20 inches; mean annual soil temperature is 45 to 47° F. The frost free season is 50 to 70 days. The soils in this association are used primarily for grazing. Lap soils are most extensive and comprise about 60 to 70 percent of the association.

17. Mountainous and Alpine Soils

This area comprises about 445,500 acres or about 18 percent of the project area. It is dominated by well drained, shallow to very shallow, dark colored, non-limey, gravelly and stony soils on high plateaus and steep precipitous barren rock canyons. Elevation ranges from 6000 to 11,500 feet. The highest peak is Silver Run Peak, 12,500 feet. Numerous other peaks are 12,000 feet or more. The area is also dotted with many small lakes. The annual precipitation is 22 to 70 inches; mean annual soil temperature is less than 45° F. This area is primarily used for recreation.

* Tenative name subject to change in correlation.

WATER RESOURCES

The Beartooth Area is drained by six major streams, the Big Horn, Clarks Fork and Stillwater Rivers, and Rock and East Rosebud Creeks with their tributaries. These streams drain the southern portion of the project area. They converge with the Yellowstone River, flowing in an easterly direction through the center of the area. The northern portion of the area is drained by small tributaries of the Yellowstone River.

One storage reservoir is located east of Boyd, Montana on Red Lodge Creek (Cooney Reservoir). This storage reservoir of 27,500 acre feet supplies irrigation water to the irrigated valley below the dam, along Rock Creek, the Poverty Flat Area and along the Clarks Fork River.

The project area is limited for suitable reservoir sites. Small sites are found on Bluewater, Elbow, Valley and East Rosebud Creeks. Development of storage water on these streams would greatly increase the present supply of irrigation water.

Approximately 110,000 acres are irrigated in the project area. Water rights have been filed for these lands.

The mountainous areas of Stillwater and Carbon counties provide the major source of high quality water resulting from snow melt. Excluding the Yellowstone River, about 1,400,000 acre feet of water flows through the valleys on an average year, during April through September. Another 300,000 acre feet flows in the October through March period. The Yellowstone River carries about 5,000,000 acre feet on an average year. Many high elevations receive upward of 60 inches of precipitation per year.

Ground water is generally plentiful in the area with local shortages in specific areas. Several areas have potential for domestic development but there is little likelihood that irrigation development is possible from this source.

WILDLIFE

The Beartooth area is noted for its wildife, hunting and fishing. The wide variety exists because habitat ranges from river bottoms to alpine types exceeding 10,000 feet elevation.

Big game animals include mule and whitetail deer, elk, moose, bighorn sheep, bear, antelope, and mountain goats. Mountain goats are the only species not native to the area. They were successfully introduced in the early 1940's by the Montana Fish, Game and Parks Department.

One of the highest deer populations in the entire northwest is in the Beartooth area. Almost every season several areas are designated as "two deer" areas. With the many miles of streams, the elusive and prized whitetail deer thrives in abundance.

Much of the Custer National Forest and the Beartooth Primitive Area is included within the RC&D Project Area. While these areas are accessible only by horseback or hiking, many hunters, both local and out of state, take advantage of the early hunting seasons for deer and elk. Camping high up on Horseshoe Mountain during the big game season and viewing the many camp fires of hunters extending the entire length of Slough Creek and Frenchy's meadows to the Yellowstone National Park border is a unique sight.

Most of the moose find the areas of Slough Creek, Buffalo Fork, and Hell Roaring to their liking. Bighorn sheep are plentiful and residents often drive to the Beartooth Dude Ranch in wintertime to observe and photograph the animals from the highway. Antelope are prolific and abound in large numbers in the northern and western portions of the project area. These animals are hunted on a permit basis.

Every year there is a season for hunting bear. Hunting is not permitted for mountain goat although they can be readily observed all summer high up in the mountain peaks.

Some of the Nations' best fishing is found in the Beartooth area. The Yellowstone and Stillwater Rivers are known nationally for their fishing. Trout streams of importance to the area are West Rosebud, East Rosebud, Rock, Fishtail and Red Lodge Creeks. Over 300 lakes, primarily in the high mountain area, provide fishing for both the novice and experienced angler.

Golden trout and grayling are found in the ice cold high mountain lakes along with brook trout and jumping rainbow. Brook, brown, rainbow and cutthroat trout abound in the streams.

The Yellowstone River provides year-long fishing. Many sports articles in national magazines attest to its popularity. In addition to summertime trout fishing, the Yellowstone in winter yields trout and whitefish to the angler fishing through the ice.

Many warm water reservoirs in the northern portion of the project are stocked with bass, crappies, bluegill, and northern pike. These places provide fishing pleasure to those we do not wish to walk and wade the trout streams.

Some of the high lakes can be fished from a boat by trolling or fly casting. Fly fishing in these lakes furnishes one of the best sports. To take a lightning fast trout from the glacier fed lakes requires rapid reflexes and excellent coordination.

Waters in the project area receive some of the highest fishing pressure in Montana due to the large population center around Billings. This demand for fishing will continue to increase rapidly as the population and leisure time increases. The Montana Fish, Game and Parks Department carries on an intensive fish management program to insure the best possible fishing.

Native upland game birds include the blue, ruffed, and sharptail grouse. Introduced birds include the Hungarian and and Chukar partridge, Chinese or ringneck pheasant and Merriam's turkey.

Generally found in the farming areas of the project, Chinese pheasant accounts for more than half of the bird hunting. Sage hens and sharptail grouse furnish variety to hunting in the lower areas. Blue and ruffed grouse supply sporting pleasure in the high country.

Important waterfowl birds for hunting are the mallard and canvas-back ducks and Canada geese. Ducks nest and hatch in the Lake Basin area of northern Stillwater county. Nearby grainfields furnish plentiful food supplies. Water and shore conditions on the Yellowstone River are favorable to both ducks and geese. Boats and a good dog aid in a successful day's hunt.

Furbearing animals in the project area include marten, mink, muskrat, otter and beaver. Predators include the coyote, wolverine, mountain lion, weasel, skunk, bobcat, and possibly the timber wolf. Non-game animals include mouse and rat groups, bats, raccoons, porcupines, the hares and rabbits, squirrels, and pocket gophers. Although the smaller mammals are not hunted, they have considerable significance from the aesthetic standpoint.

The data suggests that over 9,000 big game hunters use the project area and harvest in excess of 6,000 animals. Mule deer comprise about 95% of the take. Over 10,000 upland game birds are bagged each season with Chinese pheasant and Hungarian partridge comprising about 60% of the take. Around 5,000 waterfowl are taken annually. Mink, muskrat, and beaver are trapped annually along the major river courses.

Recreation

Recreation resources in the Beartooth area are everywhere. Located here in the beautiful Custer National Forest containing the awe-inspiring Beartooth Primitive Area with 12,000 foot peaks cloaked in everlasting snows.

In an area little appreciated is Pryor Mountain with its potentially vast storehouse of treasure for the spelunker and the seeker of Indian lore. Here the Bighorn National Recreation Area beckons the fisherman, water skier, and sightseer to enjoy the little known Bighorn Canyon and Yellowtail Reservoir.

For the student of history lore of the old West is all around. Captians Lewis and Clark travelled the area as did Chief Joseph as he eluded the U. S. Army.

Here the angler may wet a line in wild streams and catch wild trout. The man from town may build a summer cabin and enjoy life to the fullest.

Use of the area is shown by statistics such as the National Park Service estimate of 500,000 annual visitor days; the U. S. Forest Service estimate of 160,000 visitor days in the Pryor mountains; and the Bureau of Land Management forecast of 90,000 visitor days.

Most of these recreation resources are essentially undeveloped. They are ripe for the picking by the unscrupulous or the concerned person. Hopefully, this Work Plan will outline a plan of action that will work for the good of the area and posterity.

Range and Pasture

This natural resource amounts to 68% of the private lands in the area. There are about 1,150,000 acres of native range and 34,000 acres of seeded pasture land.

In addition to the privately-owned range, over 225,000 acres of Federal rangeland administered by the Bureau of Land Management and the U. S. Forest Service add their impact to the total grassland resource.

The Beartooth area has been grazed by cattle, horses and sheep since the 1870's. As farmers began to crop the land, much of the untillable rangeland became mixed with crop areas. Now the major range areas lay in the southern portion with mixed range and croplands in the north.

The Clarks Fork River drainage in Carbon County was a favorite winter range for sheep in the early days. Summering in the Beartooth and Pryor Mountains was a common practice. A minimum of winter feeding was usual.

As the land became more thickly settled and as population centers began to develop, secondary pressures on the resource have come to the front. Wildlife and recreation interests are looking to these areas to satisfy their needs. A complex interrelationship is developing between modern agricultural methods, wildlife and aesthetic values. What is good for one may be harmful to another. Evaluation and wise comprise are sorely needed.

Forests and Woodlands

There are 488,773 acres of Custer National Forest land lying in the Beartooth area. Forested lands in state and private ownership amount to 111,066 acres.

The Custer National Forest occurs as an area embracing the Beartooth Mountains and a smaller area about 30 miles to the east covering Pryor Mountains.

Private forest lands are primarily found in the north slope foothills of the Beartooth Mountains.

The topography varies from extremely steep and rugged peaks with glaciated canyons containing many glaciers and lakes, to rolling foothills and broad plateaus cut by deep limestone canyons. Elevations range from 4,800 feet near the forest boundary in the Stillwater canyon to 12,500 feet on Silver Run Peak, one of the highest points in Montana.

Other unique natural and historic features of special interest include many geological formations, Grasshopper Glacier, several ice caves, the Dryhead Overlook, waterfalls, and Indian archeological sites and artifacts.

The Beartooth Primitive area is unique in its ruggedness, similar to high areas found in Glacier National Park.

Water is the most important resource to the local economy. Water production from the area is about one-sixth of the flow of the Yellowstone River at Billings, Montana, and one-ninth its flow where it joins the Missouri. Electricity is generated at the Mystic Lake power plant and the West Fork of Rock Creek is the municipal water supply for the city of Red Lodge. Nearly all of the water originating from the area is used for irrigation purposes. During dry years the water supply is inadequate to meet demand for irrigation in local areas.

An area of about 173,000 acres is classified as non-reserved commercial forest land. The majority of the timber in this area is stagnated Lodgepole Pine stands resulting from large fires in the Beartooth Mountains. Most of the sawtimber is Douglas Fir, located in the Pryor Mountains.

The Beartooth area's annual allowable regulated cut is 2.5 million board feet. (U. S. Forest Service approximately two million board feet). The current annual harvest is about two million board feet. The demand for sawtimber is more than what can be allowed to be cut due to the demand for aesthetic, recreational values, and wilderness values. There is a constant demand for miscellaneous forest products, especially posts, poles, and Christmas trees. It is not contemplated the area's annual cut will increase because of high road costs and lack of accessibility.

Mineral Resources

The Beartooth area has a varied mineral resource, much of it undeveloped.

The area is underlaid by several coal fields yielding a good grade of subbituminous coal. Mining has nearly ceased since the railroads converted to other fuels. At present, mining must be done by high-cost underground methods and is not competitive with strip mining areas. New processes of the future may bring on a reopening of these mines.

Several oil fields have produced in past years with Elk Basin currently being the largest producer. Exploration continues and reserves appear to be substantial.

There are deposits of chromium, copper, nickel, uranium, gold, and platinum in the project area. All of them appear to have good potential for development. Most of them await suitable markets or improved processing technology.

There are deposits of high quality clay for bricks and sandstone for natural stone buildings. Development of suitable markets would see an upswing in the use of these resources.

SECTION III PROBLEMS AND OPPORTUNITIES

The problems in the Beartooth Area are many and varied. All facets of living are beset by problems -- many complex and all interdependent. In the final analysis, the problems of a resource are also a problem of people, for our resource is people.

The opportunities for Resource Conservation and Development involve the speed up of measures to conserve and develop our soil and water resources. It involves the development of an economy favorable for business and industry to profitably mold and assemble raw resources for the use of people. It involves the development of facilities to provide for the cultural and recreational needs of the area.

Here then, we will examine the many problems and offer opportunities as the people of the Beartooth Area see them.

Problems	Opportunities
1. Seeped land occurs in several areas of the Clarks Fork Valley. Formerly productive land is becoming wetter and more saline each year.	1. Several drainage investigations have been made in the Fromberg-Edgar area. Drainage plans developed have not been put into effect. By implementing these plans, several hundred acres of land can be returned to production and crop yields increased.
2. Salty and alkali "slick spots" occur in many portions of the Beartooth Area. They reduce production, complicate irrigation systems, and reduce farm efficiency.	2. It has been demonstrated by experiment stations that these problems can be cured. An educational program showing methods and benefits would aid in solution of this problem.
3. Seepage loss from irrigation canals is a major contribution to wet lands throughout the Beartooth Area. A Carbon Soil and Water Conservation District project to measure representative canals showed water losses ranging from 20 to 50%. To compensate, extra stream water is diverted, contributing to downstream shortages for irrigation and fishing.	3. Lining of irrigation ditches has proven to be a good solution. Farmers generally need cost-sharing assistance to accomplish the work. Accelerated programs to provide cost-sharing would speed up this desirable practice and reduce the seepage and associated problems.
4. For over 70 years, canals diverting water from the area's streams have been constructed as people have seen the need. Many diversions were constructed with little cooperation or consideration of other water users. The results of this "hit or miss" construction are water waste, unproductive land, weed problems, poor water control, agricultural pollution, and diminshed streamflow.	4. In many areas, it is practical for as many as six canals to be consolidated into one. On Rock Creek one survey showed at least 57 diversions. Local research into water losses and problems would provide authoritative information to carry on an educational program to show the benefits that can be obtained. Accelerated cost-sharing programs would provide financial assistance for this high-cost practice.

Problems	Opportunities
	Benefits would be an improvement of irrigation efficiency, conservation of water, and elimination of some of the drainage problems resulting from seepage.
5. The Beartooth Area has seasonal shortages of irrigation water. Overuse of water, poor production, loss of fertility, and unharvestable crops are results of poor irrigation water management. Competitive use for water is increasing rapidly.	5. An opportunity exists for the highest type of community service for agencies in the educational field. Continued emphasis through meetings, tours, and farm visits would improve water management in the area. As fertilizer use increases, proper use of irrigation water becomes more critical. Crop yield and farm income could be increased by one-third.
6. As agriculture becomes more mechanized and complex, it is becoming more difficult to operate in the "old fashioned" way. Farming has become a complex business and the successful operator is the one skilled in farm management.	6. An acceleration of farm management courses to provide information and training to all farm operators would improve farming operations.
7. The noxious weed problem increases each year. Present methods do not control the problem.	7. An area wide weed district could provide an effective unit for weed control. An accelerated education program is needed. A strong weed board enforcing weed laws would bring current knowledge to bear on the problem.
8. A variety of conditions affecting agricultural production and income shows the need for new grass, legume, and cash crops.	8. New plants are being developed. Acceleration of programs dealing with plant material development would make available a variety of new materials to fill specialized needs.

Problems	Opportunities
9. Revised irrigation methods are needed in the foothills area to reduce runoff, achieve better water management and more effective use of fertilizer.	9. The foothills area has a topography suitable for gravity pressure sprinkler irrigation. Ditches high on ridges fed into pipelines would furnish water under pressure to sprinkle uneven lands. With fertilizer applied to properly irrigated fields, it is likely that yields would more than double.
10. Serious gully erosion is resulting from the practice of continuously dumping excess irrigation water into wasteways. Wasteways, planned for emergency or occasional use, are used as a convenient water control rather than adjusting water at the headgate.	10. Private individuals and companies pursuing the practice of using wasteways for water control should be required to use headgate diversion control structures. Accelerated education and full knowledge of erosion damage should reduce the extent of this problem.
11. Many farms have become marginal operating units as the need for quantity production and efficiency has developed. Standard farming practices on the unit no longer provides a living income.	11. Through proper education and counseling, changes in operation to fit new needs is a good possibility. Where there is too little land, a switch to an operation that requires less land may be the solution to a difficult problem. As an example, feeder operations using imported feeds require relatively little land.
12. Land values are continually rising. Inflated values are above the returns that can be expected from agricultural uses. Very real competition exists between agricultural and non-agricultural uses.	12. Rural land zoning has possibilities for control of competitive land uses. Zoning regulation must be thoroughly prepared and judiciously enforced. It is a tool for achieving good land use.
13. Many soils are not producing to capacity. This is particularly true when growing the newer varieties of plants available today.	13. Acceleration of educational programs on fertilizer use coupled with intensified research would point the way to higher production.

Problems	Opportunities
	Full production is essential if each acre is to support its share of farm costs.
14. Market outlets are limited in the Beartooth Area. Industry using by-products of farm operations, such as poultry processing plants, are not located in the trade area.	14. Opportunities exist for the formation of marketing associations for both animal and non-animal products. Feasibility studies would point the way to development of other market outlets.
15. Competitive use of land resources shows there is need for a better appreciation of proper land use. Much land is unsuited to the crops being grown. Other land has much higher potential than its present use.	15. A standard soil survey is nearing completion in Carbon County. The surveys must be accelerated in Stillwater County to make modern soil information available to the entire Beartooth Area. Soil information would make possible the proper use of the land throughout the area.
16. Erosion by wind and water continues to be a problem on croplands in the area. About ½ of the land needs some type of conservation treatment to reduce erosion and remain in production. Irrigated lands suffer from too much or too little water, low fertility, and unfavorable soil conditions.	16. Through the Carbon and Stillwater Soil and Water Conservation Districts, soil and land use information is available to cooperators of the Districts. This information is supplied in the form of Basic Conservation Plan developed by the farmer or rancher and the District, with technical assistance from local agencies.
17. The kinds of plants growing on much of the cropland have limited production potential. There is a need for conversion of these lands to crops having higher yield potential.	17. Educational programs and "on the farm" service would bring present knowledge of high producing crops to the land. Cultural information must be supplied to achieve full benefit.

SECTION III

WATER

Problems	Opportunities
1. Water users in the lower portion of Rock Creek generally have earlier water rights compared to those upstream. This came about by early irrigation development in the 1890's. Users in the headwaters area have their water restricted early in the season so that downstream users with prior rights may receive water.	1. Several locations to store mountain water have been proposed at various times. Some were reported not feasible. With new technology and increasing needs, all potential developments should be investigated and evaluated. An increase in storage would reduce late season shortages in the Red Lodge area.
2. The Clarks Fork River, Rock Creek, Stillwater River, and others have bank stabilization problems. Correction has been on an individual basis according to real or apparent needs. Too often, the stream work has aggravated the problem, caused additional losses of land, and destroyed good fishing areas.	2. There is opportunity to stabilize the Beartooth area streams if done on a planned basis. All of a stream or a considerable portion done as a project could control the stream and still provide or enhance wildlife and aesthetic values.
3. Farm feedlots and corrals are often located on river banks to obtain better drainage and waste disposal. The pollution is increasing as more feeding develops. Total pollution load is affecting stream uses.	3. Farmers and ranchers have lived their lives with livestock. They generally do not realize the extent their own operation is adding to the stream pollution. A strong educational program would make these people aware of their contribution to this problem. Local action could forestall legislative controls.
4. Mining areas on the Stillwater River are potential sources of pollution of this fine trout stream. An increase in mining activities is about to begin.	4. A coordinated effort between mining interests and private and public groups should be made to control this problem. Mining wastes are controllable if worked on from the beginning of operations.

Problems	Opportunities
5. Portions of the Beartooth Area have limited water, both for domestic and irrigation uses. More full development could be achieved by plentiful water supplies.	5. A ground water survey has been made of Carbon County by the Montana Water Resources Board. This survey has delineated areas of potential ground water suitable for intensive study. A similar study should be made of Stillwater County to complete the inventory of the entire Beartooth Area.
6. Where opportunities to develop water supplies arise, the effort to implement it never succeeds. A coordinated approach does not develop.	6. The Small Watershed Program (Public Law 566) is available and applicable to most water problems. This program would provide a means to bring people together to solve these problems. Several watersheds would benefit from reservoirs constructed in an overall management plan.
7. Should any extensive water development occur in the Beartooth Area, full water information would be needed for proper management.	7. Acceleration of snow course information, stream gauging, stations, and other programs would provide timely information.
8. Erosion control and flood prevention is needed on some watersheds in the project area.	8. Properly implemented watershed plans would reduce sediment, pollution, increase forage production, provide flood control and new recreational facilities for the area.
9. Road construction south of Pryor Mountain for mining exploration and mineral extradition and pipeline construction in the Elk Basin Oil Field has caused extensive erosion.	9. Greater consideration and planning effort to take into account the erosion forces should be made. Project encouragement would have great influence on industries developing and using the area.

Problems	Opportunities
1. There is a general deterioration of range condition in the area resulting from near continuous heavy use since the 1870's. Desirable bunchgrasses have given way to lower producing short and annual grasses on many ranges. About half of the privately owned rangeland is in need of protection from overgrazing.	1. Varying the stocking rates with forage production from year to year would make range use more uniform. General acceptance of the principle "take half and leave half" would establish an improvement trend on the ranges.
2. Big Sagebrush has increased on many ranges. This increase is the natural adjustment that occurs when native bunchgrasses are grazed too closely and die out. There are 50,000 to 75,000 acres of range in need of brush control.	2. In suitable areas, chemical spraying by air and ground methods is the most advantageous method of control. To be successful, all aspects of control must be checked and all specifications observed. Controls of this type involve the changing of the ecology of the area and often have effects reaching beyond the immediate problem. Adverse effects on wildlife and lack of range improvement can be traced to arbitrary use of this method.
3. Many ranches have public and private ranges on their units. Coordination of all resource interests in planning and using the resource wisely continues to be a problem. Piecemeal rather than coordinated plans are common. Private owners and public agencies have programs of range management and improvement, but ranges are still producing below their potential.	3. Dual planning procedures are now being carried out between the Carbon and Stillwater Soil and Water Conservation Districts and the Bureau of Land Management. These efforts are limited mainly to the larger units. Acceleration of this program and extension to smaller units would increase the amount and desire for coordinated plans.

Problems	Opportunities
4. There is a lack of sound management systems by individual users. The shift from winter feeding, to calving, to spring pastures, to summer grazing is often done with little semblance of good management. Changes are made on the basis of convenience, water, or other controllable facilities. Too often, the basic resource of soil and plants are given second priority.	4. Accelerated educational programs would underline the importance of sound range management systems. Increased emphasis on the ranch conservation plans of the Soil and Water Conservation Districts would provide customized plans for individual ranchers.
5. There is a lack of uniform use of rangelands. Structural measures and management tools are not being used to the fullest extent.	5. There is opportunity for achieving uniform range use by developing physical improvements such as cross fences, water developments, special use pastures, and weed and brush control. Riding, herding and effective use of salt are not used to the extent necessary to achieve uniform use. Up to 500 water developments could be installed to aid livestock distribution.
6. Each season sees an increase in kinds and quantity of noxious weeds invading our range areas.	6. An accelerated weed control program would serve to resist the weed problem. Native range plants weakened by overuse cannot successfully compete with the usual unrelished and aggressive noxious weed.
7. Ranches are often stocked according to the amount of hay produced with little concern for proper balance with range. All suited lands are devoted to hay production.	7. Rancher developed conservation plans prepared in cooperation with the Soil Conservation Districts provide basic inventory information to show the proper balance between hay and grazing. They provide accurate information to make sound decisions for converting fields from hay to tame pasture.

Problems	Opportunities
8. Ranchers realize that sound range management proposals will conserve soil, grass, wildlife, and aesthetic values. They do not fully understand how this can also be profitable to them.	8. Cost and return studies provide direct rancher proof as to the value of these methods. The following cost and return summary shows the extent the economy of ranching could be improved by proper management.
9. The need for pure, clean water is increasing at an accelerated rate.	9. The greatest opportunity for watershed protection and high quality water is the implementation of proper use by livestock.

Based on these estimates and local ranchers' experience and figures, the costs and net returns per year from privately owned rangeland in Stillwater and Carbon Counties are as follows: (these are broad estimates)

Carbon and Stillwater Counties (Privately owned range)	Fair Range Condition		Good Range Condition	Total Present Estimated Cost and Return	Conservative Estimated Potential after all private range is in good condition. Properly stocked and managed
	Overstocked & Overgrazed	Properly Stocked	Properly stocked and managed		
Calf Crop %	70%	85%	90%		90%
Average weaning weights	325#	410#			410#
Winter feed period	5 mo.	4 mo.	3 mo.		
Gross Income from Beef	$793,798	$823,251	$1,492,057	$3,109,106	$3,500,982
Annual Rangeland Costs	$ 53,072	$100,425	$ 122,055	$ 275,552	$ 286,391
Annual Livestock Costs	$782,092	$493,505	$ 688,864	$1,960,461	$1,616,360
Net Return	-$ 41,366	+$229,321	+$ 681,138	$ 873,093	$1,598,231

*See following page

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In addition to the monetary benefits of good range management, there are the aesthetic values and soil and water erosion control. Native range in good to excellent condition results in the highest returns in terms of forage for livestock and game, recreation values, and watershed protection. The highest degree of natural soil stability and water conservation is attained.

Range conditions have deteriorated from excellent to poor condition class in many areas.

40-45% of the two counties is properly stocked and managed and in good to excellent condition, approximately 35% properly stocked and managed in fair condition, and from 20-25% in fair or poor condition that is still being overstocked and improperly managed.

Problems	Opportunities
1. Relations between hunter and landowner is a very real problem. Lack of understanding, coordination, and responsibility affects all phases of wildlife management and use.	1. Acceleration of the hunter education program among the younger folks and extension of this program to sportsman's clubs would be helpful. RC&D project backing of public relations programs would promote better understanding and working relationships.
2. Landowners find that careless and irresponsible sportsmen cause added expense and concern to his operation. Posting, or the threat of posting, occurs seasonally or year long according to the many factors affecting farming and ranching operations.	2. Encourage landowners to improve hunting conditions on their land and then offer privileges and services as an income producing enterprise.
3. Access is a continuing problem. It is necessary for the sportsman, but it is the key to successful management of game animals that they have the ability to overpopulate their habitat.	3. Access roads on public lands to make additional foothills area available to hunting would aid in a uniform, predictable harvest.
4. Yearlong habitat for all forms of wildlife is steadily being lost as more efficient methods are devised to use the land. A break in the life cycle needs has drastic effect on the existence of birds, animals, and fish.	4. Encourage the use of agricultural practices that minimize loss of habitat. Wholesale spraying, burning, and cleanup makes a wildlife desert of a farm. Often the farm requirements can be met with careful use of these controls and leave precious habitat for wildlife.
5. Big game animals, particularly elk, are not as plentiful as the sportsmen desire.	5. Desirable winter range is the key to big game numbers. Public acquisition of additional winter ranges would allow the increase in elk population.
6. Habitat for nesting and hatching of waterfowl is limited.	6. Acceleration of pond construction and stream fencing programs would increase these key areas.

Problems	Opportunities
7. Wild fish from the streams are being lost in irrigation ditches.	7. Screening of headgates would prevent this problem. As yet, a suitable, maintenance free screening system is not available. Such a product would be an asset to wildlife and benefit the economy of the project.
8. Escape cover and roosting areas are limited in the cultivated areas of the project.	8. An accelerated farm and field shelterbelt program would give immeasurable improvement to this part of habitat needs for birds.
9. As additional cabin sites develop and man use increases, the stream pollution problem is multiplied many times. Since the development of modern sanitary facilities, the waste disposal needs have increased greatly. Too often the stream is used as a convenient sewer with cabins piping raw sewage directly to the stream or discharging it into porous gravels. These materials reduce oxygen, increase algae growth, alter the food chain, deteriorate aquatic habitat, and are offensive to the sight and smell.	9. A two-county sanitarian is now employed by Carbon and Stillwater counties. He has available sanitary regulations to curb these pollution problems. The project could extend cooperation that would make his efforts many times more effective. Total support for his efforts is needed for this program to be successful.
10. Agricultural land causes stream pollution by siltation. This reduces the potential for fish reproduction, raises stream temperatures, and encourages rough fish.	10. The encouragement of good land use practices such as proper irrigation methods, proper grazing methods, careful channel work, and maintenance of tree and brush cover along streams will prevent this problem.
11. Population forecasts show that we will continually be short on fishing areas.	11. Lakes too shallow for good fishing such as West Rosebud, Emerald Lake, and Wild Bill Lake could be raised to become good fisheries.

Problems	Opportunities
	Stunted brook trout lakes on the Beartooth Plateau could be removed and restocked with desirable species. Private income fishing ponds should be encouraged by all groups and agencies.
12. Additional fishing waters are needed to meet pressure from recreationists.	12. Consider the possibilities of wildlife benefits from construction of reservoirs under the Small Watershed Program. Investigate possible reservoirs by making use of highway fills.
13. Mining activity is increasing in the Stillwater and Cooke City areas and poses a severe pollution problem.	13. This form of pollution should be thoroughly checked and methods developed to prevent this from happening.
14. Irrigation diversions reduce stream flows at times to levels that are harmful to fish.	14. Consolidation of ditches to reduce the number of diversions and the resulting increase in efficiency would reduce the amount of water being diverted.
15. There is a conflict between range use and wildlife use on both public and private lands.	15. This conflict many times has its roots in improper range use. Pastures that are managed on a rotational system and grazed moderately will be beneficial to both livestock and all types of wildlife. Acceleration of Soil Conservation District conservation planning activity will do much to alleviate this conflict. Coordination between resource agency grazing plans and Soil Conservation District plans will provide area planning of direct benefit to all users.

Problems	Opportunities
16. The Clarks Fork River is silt laden much of the year. Fishing is poor and the river is not attractive.	16. It has been said that this stream can be "cleaned up". Feasibility studies should be made to determine if this can be done. An attractive Clarks Fork River would enhance the recreation values of this area immensely.
17. Popular fishing waters lie in the Montana-Wyoming border. Licensing requirements of each state are separately enforced. Inequities exist, confusion reigns, and sportsmen of both states are unhappy.	17. Project support can be given to the State legislators, Montana Fish, Game & Parks Commission, and Wyoming authorities for development of mutually beneficial reciprocal licensing in these common use areas.
18. Construction of pits for oil have been improperly located and/or constructed. One oil pollution problem has already occurred in the Silver Tip tributary of the Clarks Fork River. This has a drastic effect on our wildlife.	18. Pollution problems never stay where they were created. If they did, they would not be classed as pollution. Strong project encouragement should be given to private and public groups seeking to minimize or curb this threat.

Problems	Opportunities
1. Access to scenic areas, picnic locations, hiking, etc., is becoming more difficult on private and public lands. The recreationist very often is considered unwelcome by land owners who have had unfavorable experiences with people who do not understand the needs of the farmer and rancher who own the land.	1. Recreation areas abound on private lands with easy access from well traveled roads. Development of these areas would fill a very real need for recreationists and furnish income for the landowner. Transfer of public lands for access has occurred and agencies need encouragement to do more.
2. There are many historical sites that are abandoned, deteriorating, or vandalized. Fort Pease, Carbonado mines, and Bowler town sites are examples of a historic era passing into oblivion.	2. Many historic sites and settings are accessible to the visitor. Community projects to clean them up, properly sign, and provide colorful information would enhance the drawing power of the area. Reconstruction of historic landmarks such as Bowler Townsite could be feasible in the light of recent archaeological developments in the Pryor Mountain Area.
3. Many individuals as well as private and public organizations are developing plans and programs within the Beartooth Area. There is lack of coordination of effort, particularly among private individuals and other local group efforts. Duplication of effort, site abandonment, and voids occur as development progresses on a piecemeal basis. As an example, local developers are not always aware of the Yellowstone Waterways plans, National trail system, and others.	3. A local organization with appropriate support could serve to coordinate and disperse information on the many activities underway and being planned.

Problems	Opportunities
4. The Yellowstone River is developing into a popular boat and raft recreation facility. Facilities for stopovers at frequent intervals are lacking.	4. The Montana Fish, Game & Parks has designated the Yellowstone River from Yellowstone National Park to Billings as the Yellowstone Waterway. Their program envisions stopover areas spaced every 4 hours of a float trip. Project assistance could aid in the acquisition of some of the necessary sites. Many historical sites such as Young's Point have great informational value for the river floater retracing the Lewis & Clark expedition.
5. Development of the Pryor Mountain Area, the Bighorn National Recreation Area, and associated attractions poses the problem of all weather access roads to the area.	5. County roads now lead from the Clarks Fork Valley easterly to the Pryor Mountains, the Wild Horse Refuge, and the Yellowtail Reservoir. A properly selected road could be graded and oiled to develop a tourist route leading from western locations in the Beartooth Area. Project assistance could aid in securing additional funding and planning for responsible State agencies and counties to further develop access roads.
6. The public is entitled to see and view its many treasures and historical sites. The archaeological sites and artifacts in the Pryor area should be made available so all can see.	6. The archaeology attractions in the Pryor area provide the opportunity for museum, viewing trails, and other associated facilities. These developments will aid in developing the attractability of the area to traveling people. They will also provide employment for students and adults of the area.

Problems	Opportunities
7. The south Pryor mountain region is rich in archaeological treasure. Current investigations show that man has inhabited this area for centuries. Evidence of thievery and vandalism are already showing. Priceless archaeological sites may be desecrated as the area becomes well known.	7. Local organizations in cooperation with local law enforcement officials can produce an informed citizenry who will be concerned enough to act vigorously in the development of a plan to prevent this from happening. Properly laid out areas, with appropriate safeguards will make these areas available to the public and still safeguard our heritage. Currently the U. S. Forest Service, National Park Service, BLM, Bureau of Indian Affairs, Montana State Fish, Game and Parks Department are financing archaeological studies in the Pryor Mountain area to locate and define these sites. All of these agencies can then take action to protect those sites suitable for use by the general public. The Antiquities Act of 1906 spells out the general rules and regulations governing archaeological sites. Much of the Pryor Mountain area has been posted with signs quoting from the Antiquities Act.
8. The touring public desires accommodations over and above mere housing. Recreation in the form of parks, swimming, golfing, bowling, and sight seeing are needed for total development of visitor facilities.	8. Attractive city parks, bowling alleys, golf courses, and swimming pools, well publicized, have great opportunities in the area. Drive-in stores, laundry facilities, attractive showers, all have a place in the area.

Problems	Opportunities
9. Yellowstone National Park is rapidly becoming so overcrowded that visitors cannot find accommodations. Damage to the Park and inadequacy of facilities contribute to the problem.	9. Development of overnight accommodations should be encouraged in all of the towns in the Beartooth Area. Publicity programs aimed at National Park tourists to show them that adequate facilities exist outside the Park boundaries.
10. Much of the winter recreation is special purpose and requires special skills to participate. Family recreation of a non-skilled nature is needed to provide well rounded attractions.	10. Opportunity exists to develop snowmobile routes on National Forest, Bureau of Land Mangement, state and private lands all along the Beartooth Mountain front. Groups of ranches could develop routes, rest stops, and eating facilities through their lands which would offer unparalleled winter family sport. Renting of hayfields to snowmobile clubs for day use could be a means of providing supplemental ranch income.
11. Facilities at Red Lodge Mountain for skiers are limited during the peak of the winter season.	11. Dependent on the financial situation of Grizzly Peak, Inc., it is feasible to add additional accommodations, particularly overnight facilities, at Red Lodge Mountain. Feasibility studies should be made on additional areas in the Beartooth Mountains where skiing can be developed.
12. The ice caves in the Pryor Mountains are one of the most interesting phenomena in the area. Physical size limits their use, but an upset in temperatures poses the greatest problem. It is thought that with increased use, the ice formations deteriorate from temperature rises caused by air movement and warmth of human bodies.	12. Investigations by cave specialists to fully develop ice caves in the Pryors is drastically needed. Coordination between the BLM and U. S. Forest Service to obtain qualified specialists is being pursued. Also, some development such as construction of a new trail to the Big Ice Cave is in the planning and construction phase.

Problems	Opportunities
13. There are not enough youth camps in the area and facilities are limited in the existing ones.	13. A variety of youth camps and facilities could supply the need for this style of recreation. Summer employment for students would add to the economy of the area. National Forest lands are extremely limited for this type use (there are several youth camps existing on National Forest lands), therefore any additional sites would probably be located on private and other state and federal lands.
14. Recreation sites for campers, boaters, and picnickers are limited. Very little water based recreation is available.	14. Current development plans for Cooney Dam envision an adequate recreation complex. Assistance should be given to the Montana Fish, Game and Parks Commission to completely develop this area. West Rosebud, Emerald, and Wild Bill Lakes can feasibly be enlarged and developed for this type use.
15. With increased traffic, both local and tourist, the problem of vandalism is becoming serious.	15. In addition to increased law enforcement, the opportunity exists for organization of a Citizen Reporting Service. Constant surveillance by local people on strange vehicles and suspicious movements can aid local law enforcement people in the apprehension or prevention of thievery and vandalism.

Problems	Opportunities
16. In some areas of the Custer National Forest, the horses used by recreationists are overgrazing limited pasture areas. Sanitation facilities are nonexistant in the primitive area and limited elsewhere.	16. There is opportunity for the RC&D project to encourage Public Relations and information activities to protect the resource. The U. S. Forest Service is now restricting the grazing use in the back country. Further restrictive control measures will be necessary in the future to control use.
17. The Beartooth Area is not well known to recreationists from other states.	17. The possibility of securing national recognition should be explored. Tours conducted for writers, recreationists, and public figures have been productive in other areas. Well written ads in national publications are fruitful for other areas. These methods would apply to the Beartooth Area as well.
18. Trail systems intended for hiking are not available. Rest and sleeping facilities are not available.	18. Opportunity exists to develop shelters for snowmobile trails and summer hikers outside the Beartooth Primitive Area.
19. Developed mineral springs and baths are not available in the Beartooth Area. The nearest spa is located in Wyoming.	19. At least one known mineral spring between Joliet and Rockvale is in existence. This facility or a new one would provide additional attraction for local people and the nearby population centers.
20. With more intensive use, the problem of fire control and littering increases. In the case of private lands, it results in No Trespassing signs.	20. Normal methods of providing firebreaks, litter barrels, and the like, will continue to be used. Mutual understanding of rules and regulations should be considered to make it easier to enforce the proper care of the land being used.

Problems	Opportunities
	Consider the opportunity of sportsmen's associations, Rod and Gun clubs. Chambers of Commerce and other civic organizations developing programs between private landowners and sportsmen to regulate use and possibly promote commercial enterprise.
21. Stream pollution is increasing as recreationists make greater use of the area. Summer homes and cabins built along streams use the stream as a convenient sewer. Others discharge wastes directly into river gravels that lead directly to the stream. For all practical purposes, the Stillwater-Carbon County sanitarian can operate only in an advisory capacity. Enforcement of pollution regulations is ponderous and difficult.	21. New cabin sites are required to comply with pollution regulations. Older cabins and pollution sources must be found by complaints and investigations. Project support for workable regulations would aid in their enactment. Project sponsorship of groups seeking to develop cooperation with landowners would give material assistance to the problem.
22. Dude-ranching, show-me-farms, vacation farms and similar rural recreation facilities are not commonly available in the area.	22. Farmers and ranchers in the area generally are not aware of the opportunity available for income producing recreation. Feasibility studies should be made to show landowners the potential. Publicity campaigns by organizations in national outlets would acquaint the public with this desired facility.
23. There is a lack of recreation facilities in areas that are popular for Senior citizens.	23. Comfortable quarters and areas where retired people can gather and participate in group activities can be arranged for in most of our towns. In many cases, the facility is already there and merely requires action from an organization that cares.

Problems	Opportunities
	A coordinated effort would find financial, technical, and manual assistance for the project.
24. Facilities for youth are scanty in the area. Additional facilities should be developed to give these people a variety of outlets for their energies.	24. Many borrow areas developed for sand and gravel now have water in them. Some of these, with coordinated effort could become first class swimming areas. Also there is opportunity to develop county or city swimming pools and parks containing tennis courts, volleyball courts, basketball courts, and other recreational facilities for the youth.
25. Enormous quantities of information are available on the area, but no coordinated effort has been made to make it available to the casual seeker.	25. A great opportunity exists for the RC&D project to serve as a focal point for total recreation information.
26. Conclusions of the National Park Service, U. S. Forest Service, and the Bureau of Land Management show: a. Total visitors to the Yellowstone National Park are steadily increasing. b. Buffer zones of recreation sites within one day travel time of Yellowstone National Park are needed now. c. The impact of travelers deterred from the Yellowstone National Park would be substantially reduced if travelers could be directed to maintained recreation areas of the National Forests and public lands.	26. The RC&D Project can provide local assistance for necessary adjustments to provide facilities to meet these conclusions.

Problems	Opportunities
d. Reduce the number of travelers returning home discouraged by overcrowded and over-used recreation sites.	
e. Reduce indiscriminate camping incidents which create and perpetuate thoughtless littering, cutting of trees, stream, river and lake pollution, destruction of valuable and critical wildlife habitats, and excessive trampling which creates conditions conducive to soil erosion.	
27. Establishment of the Lewis & Clark Trail Commission poses the problem of implementing the features of the Act.	27. An opportunity exists to join with the Lewis & Clark Trail Commission in development and promotion of trail features in the Beartooth Area.

Problems	Opportunities
1. Facilities for young people are lacking in much of the area. The youth frequent undesirable places for lack of an alternative.	1. Dancing and roller and ice skating facilities would help draw young people from the tendency to frequent bars.
2. With greater than normal numbers of older people, the need for retirement centers becomes acute.	2. Most communities have facilities available for older persons use. The need is for leadership to make them operate. A serious attempt by the Project committees could bring good leadership to light.
3. Older people very often have highly specialized skills that are not being put to productive use.	3. Several communities have the small beginnings of arts and crafts centers. Encouragement and leadership by the RC&D project could spark these into successful ventures. A ready labor market exists among the older people.
4. Many youth will not attend college. These persons will have very limited opportunity to make a decent standard of living.	4. The area has several locations where trade schools could fill the needs of these youth. Leadership by local groups could find the location and financing to make this possible.
5. Community recreation areas such as parks, swimming pools and tennis courts are needed. They would have local use as well as providing facilities that would induce tourists to stop.	5. Grants and long term financing is available to construct recreation areas. Local leadership is needed to initiate and carry through with the job.
6. Full advantage is not being taken of the aesthetic resources of the area.	6. Leadership provided by RC&D project committees could generate ways of using the scenery, climate, and history to persuade people to look a little longer. In many cases, it would generate some much needed employment.

Problems	Opportunities
7. Sites are available for artists' colonies, camp schools for churches, for retarded children, or other groups in need of space to operate without interference. Little has been done to take advantage of this opportunity.	7. The opportunity is here, but strong leadership needs to appear. Local groups can supply this leadership if given proper encouragement and some hope of success.
8. Medical needs are a continual problem in each community. Some areas have little or no health services.	8. With the pleasant climate and beautiful scenery, there is opportunity to influence retirement age medical personnel to choose this area for easy living. They would contribute greatly to the needs of the area.
9. Small business and industry seeking to locate in one of our communities faces a difficult housing problem for its employees. Small communities have few rental units, and available ones are generally old and do not have the modern look of larger town housing.	9. Many programs are available to provide housing in communities of the area. Properly researched and coordinated, these programs can be made to fit local needs. RC&D leadership can supply this coordinated effort.
10. Communities are small and have difficulty in furnishing proper sewage and water systems as well as fire protection and garbage disposal.	10. A coordinated effort by RC&D committees could find local disposal areas. They could bring a large number of grant and financing programs to bear on the problem.
11. School systems are far too costly to operate and inadequate in furnishing the educational opportunities that are found in larger schools.	11. A coordinated program to carry through with studies on the educational needs of the area can be done. Local groups can do this if proper leadership is available.
12. Employment opportunities are lacking in much of the project area. Young people must leave the area to find employment.	12. A strong effort to secure industry, processing plants, sewing centers, trade schools, and the like would bring opportunities to light. The development of information files for use of prospective employers would encourage them to locate here.

Problems	Opportunities
13. The decline in population is a symptom rather than a problem. However, it has declined for the last 25 years. With a population of 13,326, predominantly white, evenly divided between rural and urban, it has lost ¼ of its people. The production-age people are leaving with a resulting increase in average age.	13. The opportunity to provide a sound business climate is here in the form of many local development groups. A continuing strong effort, well coordinated, based on local people can reverse the downward trend of the economy with resulting upswing in population.

Problems	Opportunities
1. Much of the non-reserved commercial forest land is stagnated Lodgepole Pine stands resulting from fires in the Beartooth Mountains.	1. There is increasing demand for miscellaneous forest products, especially posts and poles. Additional post and pole plants would utilize this timber and aid in releasing stagnated stands.
2. High road costs and lack of access limits the harvest of timber in both the Pryor and Beartooth Mountains. About 2 million of an allowable 2½ million board feet are now being harvested.	2. Recreation roads doubling as timber access roads could make accessible some areas for timber harvest.
3. In all areas, recreation, preservation of aesthetic beauty, and wilderness conflict with timber use and pose the problem of best use for the area.	3. Studies of both the Pryor and Beartooth Mountains to evaluate conflicting uses should be completed. These studies will show whether wood products industries should be encouraged in the area.
4. Recreationists using the forested areas pose a continued threat by fire and indiscriminate cutting of Christmas trees.	4. More camping areas, carefully located in non-critical places should be provided. More camp supervision should be arranged. Fuel wood needs should be provided in areas of high recreation use. The project can provide backing to secure necessary funding to do these items.
5. Mistletoe, Commandra, Western Gall Rust, and Western Pine Beetle are problems in Lodgepole Pine stands.	5. Insect and disease control in Lodgepole stands can be controlled by clear cutting. Properly done, this method can enhance the value of the area to recreationists, provide control to unaffected stands of timber, and improve wildlife habitat.

Problems	Opportunities
6. Bark Beetles are problems in Douglas Fir and Spruce stands.	6. Selective cutting of Bark Beetle infected trees can be used to control these insects. It must be done to protect aesthetic and recreational values. However, to secure public support, educational programs must be carried out giving reasons why it must be done. Appropriate informational signs would be helpful.
7. Restricted timber cutting on National Forest lands increases the pressure to cut private timberlands.	7. The State Forester has facilities to inventory the private woodlands to determine marketable timber stands and sites capable of sustained yield.
8. On many forested areas a single use is being made of the land while other potential uses are being ignored.	8. Conservation Plans developed with the Soil and Water Conservation Districts emphasize the multiple use concept to utilize the total resource potential.
9. Most commercial forest stands are overstocked, thus limiting use of the lands as well as restricting wood production.	9. Opportunity exists to conduct timber stand improvement measures to greatly increase the potential for timber production. Side benefits are increased grazing use, recreational areas, watershed capacity, and aesthetic values.
10. All private timberlands are grazed, but in many cases access through stands is limited by overstocked conditions.	10. Thinning operations could be of great benefit for increase of grazing potential beneath the forest canopy.
11. All forested areas have a good potential for recreation use and the aesthetic values of these areas should be maintained.	11. Many non-commercial forest areas are located along main roads at lower elevations and would make excellent camping and picnic spots if developed.

Problems	Opportunities
	Logging operations on commercial forest areas should consider aesthetic values when they are to be used or observed by recreationists. RC&D project support of these values will aid in their adoption.
12. Three small sawmills cut an approximate 750 thousand board feet per year. An estimated 400 M. board feet is sold locally and the rest shipped to Billings and points south and east. One post and pole plant is currently operating in the area, but supply and demand data affecting its operation is not available.	12. A survey should be made to determine the amount of lumber and posts and poles required locally for construction in the Beartooth area and adjacent counties to get an indication of future demands on these mills. There is opportunity to supply post and pole stumpage on a sustained yield basis to several plants.
13. There is no positive indication that this area can sustain present wood processing plants over an extended period of time, based on timber available from 111,000 acres of state and private lands.	13. Correlation of supply and demand data with cooperation of the State Forester would give planning groups definite information needed to program annual wood products production. It would also reveal annual yields required from timber stands to supply the mills.
14. There is no available fire protection on private forest lands outside the National Forest boundary at this time. With increased use of these lands, the aesthetic value and wood producing possibilities will be jeopardized if protection is not arranged.	14. Local organizations must take steps to obtain fire protection. The RC&D project can supply leadership to assure this protection.

Problems	Opportunities
1. Water, soil, and air pollution is a problem in the gas and oil fields of the area. Gas fumes and oil spills affect vegetation, wildlife, and human life.	1. Public opinion and legislation must be brought to bear on this problem. With large populations and greater need for conserving the resources, this problem must be solved.
2. Gully erosion is occurring where roads have been constructed. Seismograph equipment has created erosive trails in many areas.	2. Greater restrictions must be made on cross country travel by heavy equipment. Landowners should be informed of potential erosion threats from mineral exploration.
3. Archeological sites are being destroyed before field investigations can be made.	3. Archeological studies are underway now. Private landowners and agencies should be encouraged to support these studies and to assist in making known where mineral exploration is starting.
4. The development of nickel deposits on Stillwater Creek poses the threat of serious pollution of this stream.	4. Local groups should become informed as to the true nature of this mining activity and the degree of its possible pollution. Methods should be worked out to prevent loss of fish and aesthetic values.
5. Natural sandstone was quarried south of Columbus. It has not been worked for years because of lack of demand.	5. A revival in use of natural stone for buildings is underway. A study should be made as to the marketing possibilities of this stone and the re-opening of the quarry.
6. Bentonite deposits occur in the area east of the Clarks Fork River. Some claims have been staked but development has not begun.	6. Indications are that commercial deposits do occur here and possibly in other areas. Studies of these areas will reveal their potential value and point the way to commercial development.

Problems	Opportunities
7. Chromite deposits in southwest Stillwater County are classed as chemically low grade and cannot compete with higher grade foreign ore shipped in as ballast.	7. It is possible to locally process the local ore to higher grade products. A marketing and feasibility study is necessary to show the potential.
8. A brick plant was formerly operated at Fromberg using a high quality local clay. Manufacture was discontinued many years ago.	8. The clay is suitable for brick and higher grade ceramic products. High grade clay is also found in the Fort Union Formation of western Carbon County. It is necessary to develop a market for these brick products.
9. Good grade bituminous coal is present in the Red Lodge, Bearcreek, Stillwater, Silver Tip, and Bridger fields. Although this is the best coal in Montana, it cannot at this time compete with strip coal mining of coal and lignite on a cost per unit of energy basis.	9. New uses for coal and modern processing methods are developing rapidly. In the light of new technology, the feasibility of re-opening these mines should be studied.
10. Good quality gypsum occurs near Bridger. Of its many commercial uses, here it is only used for wall board, cement retarder, and soil amendment.	10. With research, gypsum might be used for manufacture of special cements and sulphuric acid or in the extraction of aluminum from clays.
11. Uranium deposits are present in the Madison Limestone of the Pryor mountains. Suitable markets are not available.	11. Government support of exploration has been withdrawn. However, the power industry is rapidly converting to uranium as a source of energy.